



August 4, 2021

Mr. Joel Coffman, P.G.  
Acting Section Chief  
Groundwater, UIC, and GIS Section  
US EPA Region 4, Water Division  
61 Forsyth Street SW  
Atlanta, Georgia 30303

**RE:      Underground Injection Control (UIC) Permit Application No. FLI0055XXX  
         Submitted by Burnet Oil Company, Inc.  
         Class II Salt Water Disposal Well Tamiami SWD #1  
         Collier County, Florida (Permit # FLI0055)**

Dear Mr. Coffman:

Water Science Associates, Inc. (Water Science) is pleased to provide a response to the U.S. Environmental Protection Agency's (U.S. EPA) request for additional information (RAI) dated May 27, 2021. The RAI was issued in response to the referenced Class II Saltwater Disposal Well Tamiami SWD #1 underground injection control (UIC) application. The proposed well is located in Collier County, Florida. The following provides the U.S. EPA's request in bold italics followed by the Applicant's response.

**1.    *Section A, Area of Review - Figures***

***Figures need to distinguish between existing and proposed wells of all types. Please correct legends in figures to clarify information portrayed, removing legend items that do not appear on the figures presented, such as subsurface geologic units listed in the legends but not appearing on surface maps.***

Below is an addendum to the application **Section A Parts 8 and 9.**

**8.0 MAPS**

**Title 40 CFR §144.31; §146.24: Maps**

***Submit a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the facility property boundary showing:***

- ***project injection well(s), well pad(s) and/or project area,***
- ***applicable area of review,***

- ***all outcrops of injection and confining formations,***
- ***all surface water intake and discharge structures, and***
- ***all hazardous waste treatment, storage, or disposal facilities.***

***Consult with your EPA regional office for the definition of the facility property boundary.***

***The information below does not apply to existing rule authorized Class II well(s).***

***Within the one-fourth (1/4) mile beyond the facility property boundary or the AOR, whichever is larger, the map will also show the:***

- ***name and location of all production wells, injection wells, abandoned wells, dry holes, and all water wells, noting their types (public water system, domestic drinking water, stock, etc.),***
- ***springs and surface bodies of water,***
- ***mines (surface and subsurface) and quarries, and***
- ***other pertinent surface features, including residences, schools, hospitals, and roads.***

***Only information of public record and pertinent information known to the applicant is required to be included on this map. Multiple maps may be needed to display this information clearly. If a certain feature is not present in the area covered, please state so definitively (e.g., “There are no known outcrops of the confining formation in the mapped area.”).***

**Figure 4 (updated)** is a topographic map presenting the following information: project injection well(s), well pad(s) and/or project area; applicable area of review; all outcrops of injection and confining formations; all surface water intake and discharge structures; and all hazardous waste treatment, storage, or disposal facilities. Unlike most of the U.S., South Florida does not have many formations cropping out. There are no known outcrops within one-half mile of the project site. Furthermore, based on a thorough review of the South Florida Water Management District and the Florida Department of Environmental Protection geospatial data portals (South Florida Water Management District 2020<sup>1</sup>; Florida Department of Environmental Protection 2020<sup>2</sup>), there are no surface water intake and discharge structures or hazardous waste treatment, storage, or disposal facilities within one-half mile of the project site.

**Figure 5 (updated)** is a topographic map presenting the following information: all production wells, injection wells, abandoned wells, dry holes, and all water wells, noting their types (public water system, domestic drinking water, stock, etc.); springs and surface bodies of water; mines (surface and subsurface) and quarries and other pertinent surface features, including residences, schools, hospitals, and roads. Based on a thorough review of the South Florida Water Management District, the Florida Geological Survey, and the Florida Department of Environmental Protection geospatial data portals (South Florida Water Management District 2020; Florida Geological Survey 2020<sup>3</sup>; Florida Department of Environmental Protection 2020), there are no oil/gas production wells; injection wells; abandoned wells; dry holes;

---

<sup>1</sup> South Florida Water Management District Geospatial Data (2020) <https://geo-sfwmd.hub.arcgis.com/>

<sup>2</sup> Florida Department of Environmental Protection Geospatial Data (2020) <https://geodata.dep.state.fl.us/>

<sup>3</sup> Florida Geological Survey (2020) Geospatial Open Data <https://geodata.dep.state.fl.us/search?q=geology&sort=-modified>



permitted water wells; springs and surface bodies of water; mining activity; or and other pertinent surface features, such as residences, schools, or hospitals, within one-half mile of the project site.

### **9.0 Area of Review Wells and Corrective Action Plan**

#### **Title 40 CFR §144.55; §146.24: Area of Review Wells and Corrective Action Plans**

***Submit a tabulation of data and wellbore diagrams reasonably available from public records or otherwise known to the applicant on all wells within the AOR included on the map, which penetrate the proposed confining zone(s). Such information will include:***

- ***well name, location and depth,***
- ***well type,***
- ***date well was drilled,***
- ***well construction that includes casing and cement details, including demonstrated or calculated top of cement,***
- ***cement bond logs (if available), and***
- ***record of well completion and plugging (if applicable).***

***For such wells which are improperly sealed, completed, or abandoned, also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into USDWs.***

Within the Area of Review (one-half mile from the Tamiami Prospect project site) and as noted in the permit application on **Table 1**, there are no oil and/or gas wells based on data obtained from the Florida Geological Survey and the Florida Department of Environmental Protection geospatial data portals (Florida Geological Survey 2020<sup>4</sup>; Florida Department of Environmental Protection 2020; **Figure 5 [updated]**).

Data for shallow water wells within one-half mile from the Tamiami Prospect project site were downloaded as an ArcGIS shapefile from the South Florida Water Management District, a publicly available database. As noted in the permit application on **Table 2**, there are no shallow water wells identified within the Area of Review.

**Attachment No. 1** provides updated area of review figures (**Application Figure Nos. 3 through 5 [updated]**) for **Section A Parts 8 and 9** that distinguishes between existing and proposed wells of all types and updates the figure legend to only present items depicted on the figures within the area of review. **None of the U.S. EPA search criteria were identified within the area of review.**

### **2. Section B, Geological and Geophysical Information**

***Provide more explanation on the Middle Confining unit i.e. its composition and its confining ability. Detail known or suspected faults and fracture systems within the AOR. If not known, then clearly state so. Detail history of seismic activity in the area***

---

<sup>4</sup> Florida Department of Environmental Protection (2020) Interactive Map <https://ca.dep.state.fl.us/mapdirect/?focus=standard>

***and proximity to crystalline (i.e., granitic) basement. If not applicable than clearly state.***

As this request contains several requests, each is discussed individually below.

- a) The middle confining unit (MCU) of the Floridan aquifer system is laterally extensive throughout southwest Florida and is specifically targeted due to the thickness and the confinement it provides at numerous underground injection control (UIC) sites. The unit is comprised of Eocene fine grained carbonates, specifically micritic limestones, dolomitic limestone, and dolostone, and evaporites, specifically gypsum and anhydrite. The most impermeable rock in the MCU is dense unfractured dolostone. According to Reese (1998<sup>5</sup>), hydrogeologic parameters were previously measured by PBS&J in 1988 and ViroGroup, Inc./Missimer Division in 1993. Reese<sup>1</sup> notes measured horizontal hydraulic conductivity of selected MCU zones ranging between  $2.5 \times 10^{-1}$  and  $4.0 \times 10^{-1}$  feet per day (ft./day), while measured vertical hydraulic conductivity of selected MCU zones ranging between  $1.0 \times 10^{-5}$  and  $1.5 \times 10^{-1}$  ft./day. The approximate thickness of the MCU ranges between approximately 500 to 800 feet.
- b) As documented on **Figure 10** of the permit application, there is one literature referenced fracture zone which cuts Triassic-Jurassic materials in the vicinity of the projects site; however, this feature is well outside of area of review and is not suspected to propagate upwards to the depths of the proposed UIC well system. It is our Professional Geologic opinion that this feature will not influence on the operation of the proposed UIC well.
- c) The Florida Platform has been a relatively stable portion of the trailing edge of the North American Plate since the Middle Jurassic with little to no seismic activity. Please refer to permit application **Section B Geological and Geophysical Information** for a detailed description of geology for the region.
- d) The depth to crystalline (i.e., granitic) basement rock is significantly deeper than the proposed depths of the proposed UIC well and is not applicable for this permit application. Please refer to permit application **Section B Geological and Geophysical Information** for a detailed description of geology for the region.

**3. Section C, Well Construction/Conversion Information, Figure 13**

***State that the USDW depth is approximate. Add the approximate depths of the confining units to the figure.***

**Attachment No. 2** presents an updated **Figure 13** indicating the underground source of drinking water (USDW) is approximate and approximate depths of confining units noted. Please refer to permit application **Section B Geological and Geophysical Information** for a detailed description of geology for the region.

**4. Section D, Injection, Operation and Monitoring Program, Table 8, Contingency Plan**  
***The application does not reference in detail how permittee will meet all reporting requirements, including 24-hour reporting requirements detailed in 40 C.F.R. §§ 144.51. Please amend the application to include reference to these reporting requirements. Injectate analysis must be performed prior to injection and afterwards***

---

<sup>5</sup> Reese, RS. 1998. Hydrogeology and the Distribution of the Salinity in the Floridan Aquifer System of Southwestern Florida. U.S. Geological Survey Water Resource Investigations Report 98-4253.

**at set intervals. List all items to be monitored including the frequency in a table. The Maximum Proposed Injection Pressure is listed as 50psi. Describe how this injection pressure was derived and confirm there will be no exceedances of this pressure.**

An updated **Table 8**. Contingency Plan is provided below. **Attachment 3** provides the 40 C.F.R. §144.51, which will be followed in respect to project reporting to the U.S. EPA. As noted on the table, the following has been added: duty to comply with the Safe Drinking Water Act; duty to reapply prior to the expiration of the permit, duty to mitigate any adverse environmental impact resulting from non-compliance, duty to provide information to the Agency, allowance for inspection and entry, duty to maintain records and approved permit on-site, twenty-four-hour reporting, etc. **Attachment 4** provides the project spill response document, which details the project emergency responses during project operation.

**Table 8. Contingency Plan [updated]**

Item	Monitoring Method	Monitoring Interval
Tubing (Injection) Pressure	Pressure Transducer (SCADA/Automation); Manual Gauge	Poll rate varies from 1s to 5m, automatic shutdown instantaneous; inspected multiple times visually each day
Casing (Annulus) Pressure	Pressure Transducer (SCADA/Automation); Manual Gauge	Poll rate varies from 1s to 5m, automatic shutdown instantaneous; inspected multiple times visually each day
Pump (Injection) Rate	Meter (SCADA/Automation)	Poll rate varies from 1s to 5m, automatic shutdown instantaneous; inspected multiple times visually each day

**Notes:**

1. *The Permittee will follow all scheduled reporting and record maintenance requirements as documented in the issued permit to the U.S. EPA per 40 C.F.R. §144.51, including 24-hour reporting requirements for water quality or equipment failure and reapplication prior to permit expiration.*

Please refer to permit application **Section B Geological and Geophysical Information** for a detailed description of geology for the region. Based on our decades of professional experience with injection wells targeting the Boulder Zone of the Eocene Oldsmar Formation and their respective operation, the pressures related to the injection are usually very small. It is our recommendation that the Maximum Proposed Injection Pressure for the injection well system should be 500 psi.

**5. Section F, Financial Assurance, Exhibit 9 – Performance Bond:**

*Federal regulations at 40 C.F.R. §§ 144.28(d) and 144.52(a)(7) require that the owner/operator of rule-authorized or permitted wells maintain financial assurance (FA) resources to close, plug, and abandon such wells. The proposed method in the application for providing FA for future Plugging and Abandonment (P&A) for the well does not meet EPA requirements. We have attached some documents that better explain the various acceptable forms of FA for you to follow and use (Surety Bond, Standby Trust Agreement, Letter of Credit, & Trust Agreement descriptions).*

*Additionally, please provide information regarding the Corporate Structure of Burnet Oil Company, Inc., including officers of the Corporation and information regarding signature authority within the organization.*



**Attachment No. 5** presents all of the financial assurance forms requested along with a Certification of Authority signed by the Secretary of Burnett Oil Co., Inc. confirming signature authority of the President and Vice President, Special Services.

**6. Exhibit 7, Plugging and Abandonment Plan:**

***After item 1 in the exhibit, “Obtain Florida Department of Environmental Protection permit”, insert the following: “Provide at least 30 days written notification to US EPA Region 4 (EPA) of plans for plugging and abandoning (P&A) the well and receive written approval from EPA to proceed”. EPA, at its discretion, may want to be onsite to witness the P&A of the well.***

**Attachment No. 6** presents **Exhibit 7 (updated)** with the requested language revisions. Please refer to permit application **Section B Geological and Geophysical Information** for a detailed description of geology for the region. The Applicant understands the EPA may be on-site during construction and operations.

**7. Section K, Optional Project Information:**

***2.0 National Historic Preservation Act of 1996 – Please provide letter documentation from the National Park Service of their approval of your referenced submittal to them in 2016 (prepared in 2014) as a part of your revised permit application along with copies of your original submittal to them.***

***3.0 The Endangered Species Act – Please provide a copy of the report submitted in April 2020 to the National Park Service along with documentation showing your proposed drilling location and drilling activities do not intersect or interfere with any of the listed endangered species and their habitats as a part of your revised permit application.***

**Attachment No. 7** provides the requested information from the National Park Service.

The information provided in our application regarding wildlife and cultural surveys relate to that certain Revised Environmental Assessment for A Proposed Oil and Gas Plan of Operation: Nobles Grade 3-D Seismic Survey within Big Cypress National Preserve proposed by Burnett Oil Company, Inc. (March 2016). Available at: <https://parkplanning.nps.gov/document.cfm?parkID=352&projectID=53498&documentID=71803>

Burnett’s application to conduct 3-D seismic survey was approved by NPS in 2016. Burnett now seeks to obtain the necessary federal and state permits for its proposed drilling and production operations. Burnett filed an Operations Permit Application with the National Park Service (“NPS”) on August 14, 2020. Burnett proposes to conduct drilling and production operations necessary to access privately-owned minerals at two separate sites – the Nobles Grade Prospect and the Tamiami Prospect – within the Big Cypress National Preserve. The NPS initiated inter-agency consultation in accordance with the Endangered Species Act and the National Historic Preservation Act on November 16, 2020 and December 1, 2020, respectively. On April 12, 2021, the NPS delivered to the U.S. Fish and Wildlife Service a Biological



Assessment for Burnett's proposed operations. The BA is attached herein for reference. The NPS is currently finalizing a Cultural Resource Assessment Survey (CRAS) in accordance with Section 106 of the National Historic Preservation Act.

During our Teams meeting on July 1, 2021, it was requested that the applicant document the permits applications associated with this project and the status in addition to the U.S. EPA Class II Application being reviewed. This is presented in the table below.

PERMIT APPLICATION	FILED	STATUS	Permit Application Nos.
NPS Operations Permit Application (One for both prospects)	Yes	Submitted August 14, 2020	---
FDEP Individual Environmental Resource Permit (One for each prospect)	Yes	Submitted January 26, 2021	Nobles Grade: 0323836-003 Tamiami: 0397879-001
FDEP State 404 Permit Applications (One for each prospect)	Yes	Submitted January 26, 2021	Nobles Grade: 0323836-004 Tamiami: 0397879-002
SFWMD Potable Water – General Water Use Permit (One for each prospect)	Yes	Submitted April 26, 2021 Permit Received May 3, 2021	Nobles Grade: 11-04180-W Tamiami: 11-04181-W
SFWMD Industrial Use Water – Individual Water Use Permit (One for each prospect)	Yes	Submitted April 26, 2021 RAI Received May 7, 2021	Nobles Grade Application: 210420-2 Tamiami Application: 210420-3
FDEP Class II Well Drill Permits	No	Completed and will have prepared to file with oil well drilling permits	---
FDEP Oil Well Drill Permits	No	Will file with FDEP Class II well drilling permits - In progress	---
FDOT – Access Road Permit for Nobles Grade Prospect	No	In progress	---
Florida Division of Air Resource Management (One for each prospect)	No	In Progress	---



Water Science appreciates your attention to this matter and your availability to meet with us via Teams. Should you have any questions or require clarification, please do not hesitate to contact Mike Alfieri, P.G. or Kirk Martin, P.G.

Sincerely,



Digitally signed by Michael C.  
Alfieri, P.G., P.Hg, CGWP  
DN: cn=Michael C. Alfieri,  
P.G., P.Hg, CGWP, o=Water  
Science Associates,  
email=michaela@wsaconsult.  
com, c=US  
Date: 2021.08.04 17:23:34  
-04'00'

Michael Alfieri, P.G., P.Hg., CGWP  
Senior Managing Hydrogeologist  
Email: [michaela@wsaconsult.com](mailto:michaela@wsaconsult.com)

A handwritten signature in blue ink, appearing to read "W. Kirk Martin".

W. Kirk Martin, P.G.  
President/Senior Hydrogeologist  
Email: [kirk@wsaconsult.com](mailto:kirk@wsaconsult.com)

Cc: Wesley Hanna, Burnett Oil Company, Inc.  
Dan Waters, Barron Collier Companies  
Khurram Rafi and Jason Meadows, U.S. EPA  
FILE

Attachments:

1. Updated Area of Review Figures
2. Updated Figure 13
3. 40 C.F.R. §144.51
4. BOCI Spill Response
5. Corporate Structure and U.S. EPA Financial Assistance Forms
6. Updated Figure 7
7. Documentation from National Park Service

ATTACHMENT 1

---

# Updated Area of Review Figures



FIGURE 3. AREA OF REVIEW BOUNDARY (UPDATED JULY 2021).

**LEGEND:**

TAMIAMI PROSPECT PROPOSED WELL TYPE

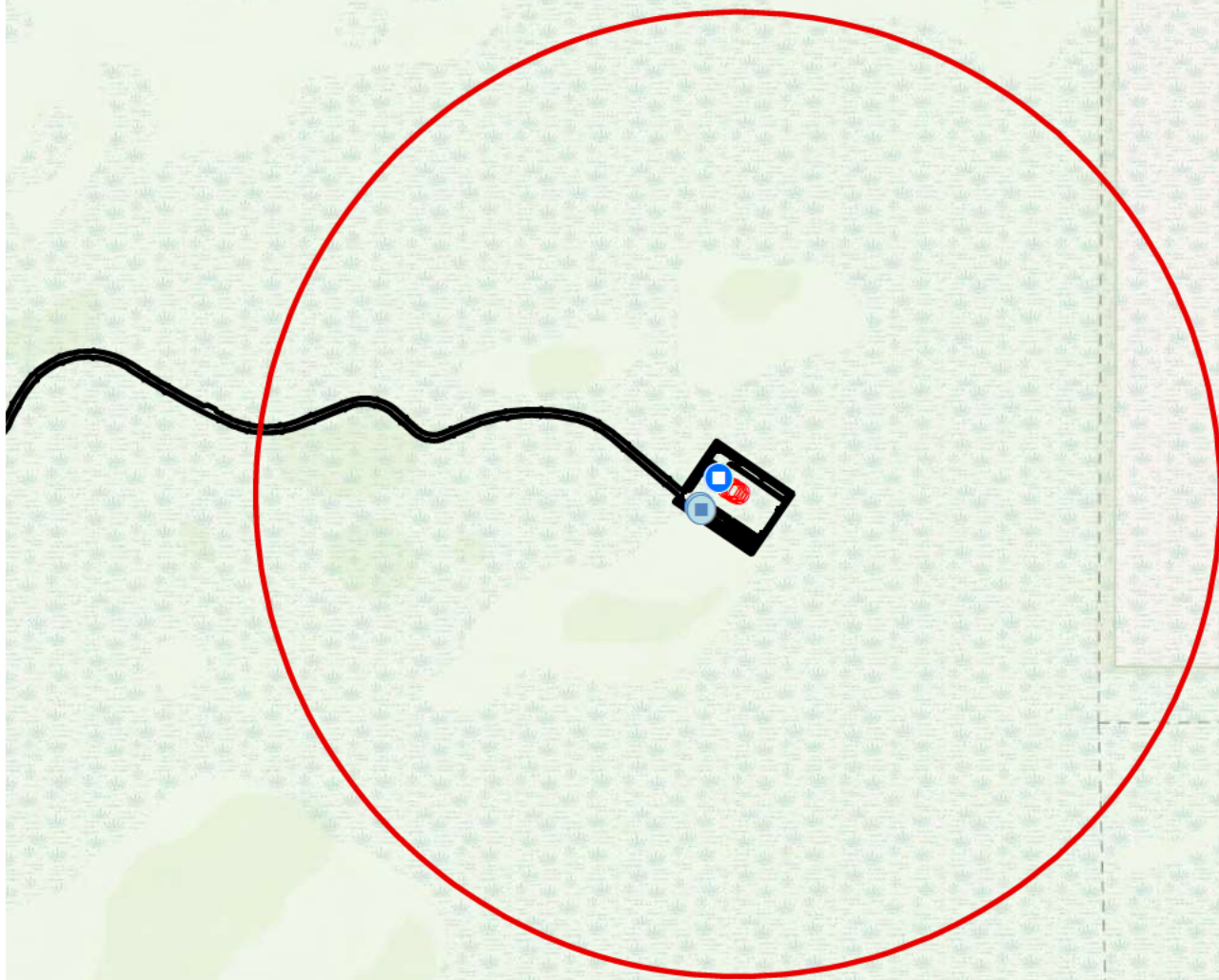
● PUBLIC SUPPLY WELL

■ INDUSTRIAL SUPPLY WELL

○ OIL WELL

● SALTWATER DISPOSAL WELL

□ 0.5 MILE PROJECT SITE AREA OF REVIEW



PROJECT NAME: TAMIAMI PROSPECT

PROJECT NUMBER: 17620-02

JULY 2021



0 250 500 1,000  
SCALE IN FEET

**FIGURE 4. ONE-HALF MILE REVIEW OF SURFACE WATER STRUCTURES AND HAZARDOUS WASTE TREATMENT AND STORAGE FACILITIES (UPDATED JULY 2021).NONE IDENTIFIED WITHIN AREA OF REVIEW.**

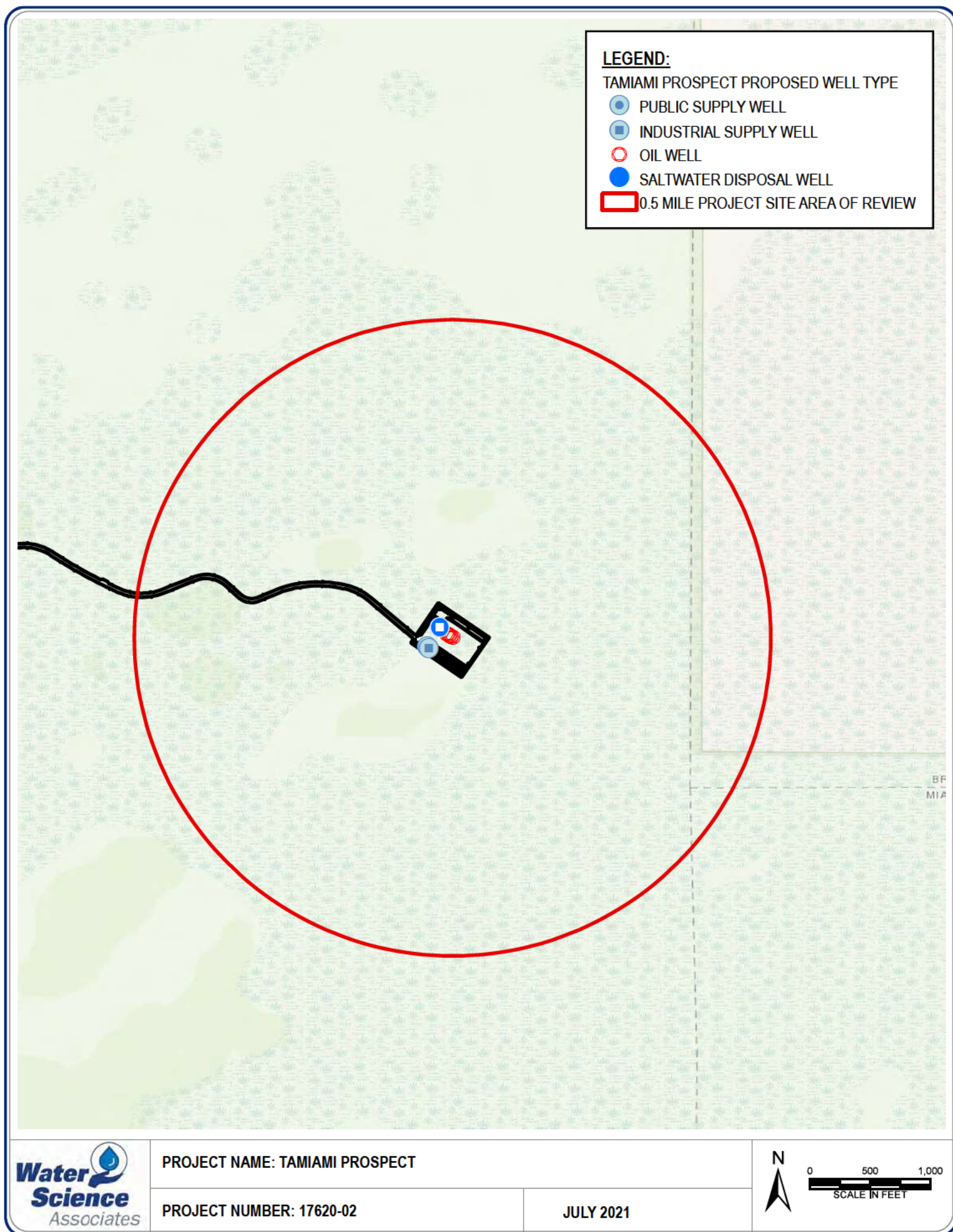


FIGURE 5. ONE-HALF MILE REVIEW OF WELLS, SURFACE WATER BODIES, AND PERTINENT SURFACE FEATURES (UPDATED JULY 2021). OUTSIDE OF IDENTIFIED WETLANDS, NONE IDENTIFIED WITHIN AREA OF REVIEW.

ATTACHMENT 2

---

# Updated Figure 13

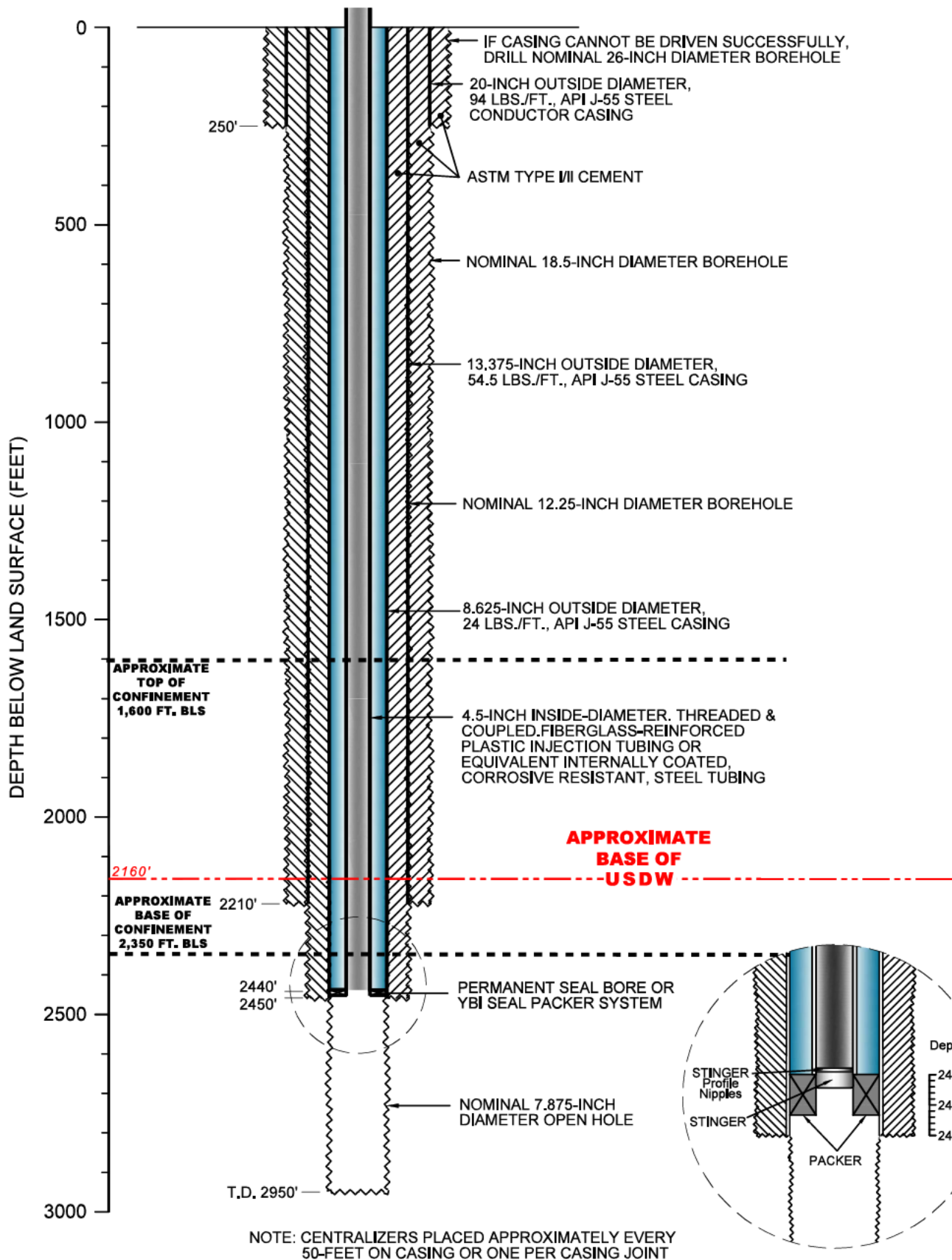


FIGURE 13. SALTWATER DISPOSAL WELL BELOW GRADE SCHEMATIC (UPDATED JULY 2021).

ATTACHMENT 3

---

40 C.F.R. §144.51

## Environmental Protection Agency

## § 144.51

transfer except upon the request of the new permittee.

(3) A determination that the waste being injected is a hazardous waste as defined in § 261.3 either because the definition has been revised, or because a previous determination has been changed.

(c) *Facility siting.* Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

[48 FR 14189, Apr. 1, 1983, as amended at 53 FR 28147, July 26, 1988; 75 FR 77288, Dec. 10, 2010]

### § 144.40 Termination of permits.

(a) The Director may terminate a permit during its term, or deny a permit renewal application for the following causes:

(1) Noncompliance by the permittee with any condition of the permit;

(2) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or

(3) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination;

(b) The Director shall follow the applicable procedures in part 124 in terminating any permit under this section.

### § 144.41 Minor modifications of permits.

Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section, without following the procedures of part 124. Any permit modification not processed as a minor modification under this section must be made for cause and with part 124 draft permit and public notice as required in § 144.39. Minor modifications may only:

(a) Correct typographical errors;

(b) Require more frequent monitoring or reporting by the permittee;

(c) Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or

(d) Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director.

(e) Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification.

(f) Change construction requirements approved by the Director pursuant to § 144.52(a)(1) (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of this part and part 146.

(g) Amend a plugging and abandonment plan which has been updated under § 144.52(a)(6).

(h) Amend a Class VI injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan, as determined by the Director.

[48 FR 14189, Apr. 1, 1983, as amended at 75 FR 77289, Dec. 10, 2010]

## Subpart E—Permit Conditions

### § 144.51 Conditions applicable to all permits.

The following conditions apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations (or the corresponding approved State regulations) must be given in the permit.

(a) *Duty to comply.* The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit under § 144.34.

(b) *Duty to reapply.* If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

(c) *Need to halt or reduce activity not a defense.* It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(d) *Duty to mitigate.* The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

(e) *Proper operation and maintenance.* The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

(f) *Permit actions.* This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(g) *Property rights.* This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) *Duty to provide information.* The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

(i) *Inspection and entry.* The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

(j) *Monitoring and records.* (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) The permittee shall retain records of all monitoring information, including the following:

(i) Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time; and

## Environmental Protection Agency

## § 144.51

(ii) The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under §144.52(a)(6), or under part 146 subpart G as appropriate. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period. For EPA administered programs, the owner or operator shall continue to retain the records after the three year retention period unless he delivers the records to the Regional Administrator or obtains written approval from the Regional Administrator to discard the records.

(3) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;

(ii) The individual(s) who performed the sampling or measurements;

(iii) The date(s) analyses were performed;

(iv) The individual(s) who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

(4) Owners or operators of Class VI wells shall retain records as specified in subpart H of part 146, including §§146.84(g), 146.91(f), 146.92(d), 146.93(f), and 146.93(h) of this chapter.

(k) *Signatory requirement.* All applications, reports, or information submitted to the Administrator shall be signed and certified. (See §144.32.)

(l) *Reporting requirements—(1) Planned changes.* The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

(2) *Anticipated noncompliance.* The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(3) *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act. (See §144.38; in some cases,

modification or revocation and reissuance is mandatory.)

(4) *Monitoring reports.* Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(5) *Compliance schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.

(6) *Twenty-four hour reporting.* The permittee shall report any noncompliance which may endanger health or the environment, including:

(i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; or

(ii) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs.

Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(7) *Other noncompliance.* The permittee shall report all instances of noncompliance not reported under paragraphs (1) (4), (5), and (6) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (1)(6) of this section.

(8) *Other information.* Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

(m) *Requirements prior to commencing injection.* Except for all new wells authorized by an area permit under

## § 144.51

## 40 CFR Ch. I (7–1–11 Edition)

§144.33(c), a new injection well may not commence injection until construction is complete, and

(1) The permittee has submitted notice of completion of construction to the Director; and

(2)(i) The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or

(ii) The permittee has not received notice from the Director of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in paragraph (m)(1) of this section, in which case prior inspection or review is waived and the permittee may commence injection. The Director shall include in his notice a reasonable time period in which he shall inspect the well.

(n) The permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.

(o) A Class I, II or III permit shall include and a Class V permit may include conditions which meet the applicable requirements of §146.10 of this chapter to ensure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. Where the plan meets the requirements of §146.10 of this chapter, the Director shall incorporate the plan into the permit as a permit condition. Where the Director's review of an application indicates that the permittee's plan is inadequate, the Director may require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the permit. A Class VI permit shall include conditions which meet the requirements set forth in §146.92 of this chapter. Where the plan meets the requirements of §146.92 of this chapter, the Director shall incorporate it into the permit as a permit condition. For purposes of this paragraph, temporary or intermittent cessation of injection operations is not abandonment.

(p) *Plugging and abandonment report.* For EPA-administered programs, within 60 days after plugging a well or at the time of the next quarterly report (whichever is less) the owner or operator shall submit a report to the Re-

gional Administrator. If the quarterly report is due less than 15 days before completion of plugging, then the report shall be submitted within 60 days. The report shall be certified as accurate by the person who performed the plugging operation. Such report shall consist of either:

(1) A statement that the well was plugged in accordance with the plan previously submitted to the Regional Administrator; or

(2) Where actual plugging differed from the plan previously submitted, and updated version of the plan on the form supplied by the regional administrator, specifying the differences.

(q) *Duty to establish and maintain mechanical integrity.* (1) The owner or operator of a Class I, II, III or VI well permitted under this part shall establish mechanical integrity prior to commencing injection or on a schedule determined by the Director. Thereafter the owner or operator of Class I, II, and III wells must maintain mechanical integrity as defined in §146.8 of this chapter and the owner or operator of Class VI wells must maintain mechanical integrity as defined in §146.89 of this chapter. For EPA-administered programs, the Regional Administrator may require by written notice that the owner or operator comply with a schedule describing when mechanical integrity demonstrations shall be made.

(2) When the Director determines that a Class I, II, III or VI well lacks mechanical integrity pursuant to §146.8 or §146.89 of this chapter for Class VI of this chapter, he/she shall give written notice of his/her determination to the owner or operator. Unless the Director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the Director's determination. The Director may allow plugging of the well pursuant to the requirements of §146.10 of this chapter or require the permittee to perform such additional construction, operation, monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Director that the owner or operator

## Environmental Protection Agency

## § 144.52

has demonstrated mechanical integrity pursuant to §146.8 of this chapter.

(3) The Director may allow the owner or operator of a well which lacks mechanical integrity pursuant to §146.8(a)(1) of this chapter to continue or resume injection, if the owner or operator has made a satisfactory demonstration that there is no movement of fluid into or between USDWs.

[48 FR 14189, Apr. 1, 1983, as amended at 49 FR 20185, May 11, 1984; 53 FR 28147, July 26, 1988; 58 FR 63898, Dec. 3, 1993; 75 FR 77289, Dec. 10, 2010]

### § 144.52 Establishing permit conditions.

(a) In addition to conditions required in §144.51, the Director shall establish conditions, as required on a case-by-case basis under §144.36 (duration of permits), §144.53(a) (schedules of compliance), §144.54 (monitoring), and for EPA permits only §144.53(b) (alternate schedules of compliance), and §144.4 (considerations under Federal law). Permits for owners or operators of hazardous waste injection wells shall include conditions meeting the requirements of §144.14 (requirements for wells injecting hazardous waste), paragraphs (a)(7) and (a)(9) of this section, and subpart G of part 146. Permits for owners or operators of Class VI injection wells shall include conditions meeting the requirements of subpart H of part 146. Permits for other wells shall contain the following requirements, when applicable.

(1) *Construction requirements* as set forth in part 146. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. Except as authorized by an area permit, no construction may commence until a permit has been issued containing construction requirements (see §144.11). New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Administrator as minor modifications (§144.41). No such changes may be phys-

ically incorporated into construction of the well prior to approval of the modification by the Director.

(2) Corrective action as set forth in §§144.55, 146.7, and 146.84 of this chapter.

(3) *Operation requirements* as set forth in 40 CFR part 146; the permit shall establish any maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the part 146 operating requirements.

(4) *Requirements for wells managing hazardous waste*, as set forth in §144.14.

(5) Monitoring and reporting requirements as set forth in 40 CFR part 146. The permittee shall be required to identify types of tests and methods used to generate the monitoring data. For EPA administered programs, monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in table I of 40 CFR 136.3 or in appendix III of 40 CFR part 261 or in certain circumstances by other methods that have been approved by the Regional Administrator.

(6) After a cessation of operations of two years the owner or operator shall plug and abandon the well in accordance with the plan unless he:

(i) Provides notice to the Regional Administrator;

(ii) Describes actions or procedures, satisfactory to the Regional Administrator, that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Regional Administrator.

(7) *Financial responsibility.* (i) The permittee, including the transferor of a permit, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director until:

ATTACHMENT 4

---

## BOCI Spill Response



## **DRAFT** SPILL CONTROL & EMERGENCY PREPAREDNESS PLAN

**Burnett Oil Co., Inc.**  
**Nobles Grade and Tamiami Tank Batteries**  
**Big Cypress National Preserve**  
**Collier County, Florida**



Prepared By:  
Jose Orsini – Director, EPRM  
Michael Ballenger, PE – Principal Consultant

**TRINITY CONSULTANTS**  
919 Lake Baldwin Ln, Suite B  
Orlando, FL 32814  
(407) 982-2891

March 2020

Project 201001.0052



*Environmental solutions delivered uncommonly well*

## TABLE OF CONTENTS

<b>1. INTRODUCTION &amp; FACILITY DESCRIPTION</b>	<b>1</b>
1.1. Process Description .....	1
1.2. SPCC Applicability.....	2
<b>2. IDENTIFICATION OF SUBSTANCES</b>	<b>3</b>
<b>3. IDENTIFICATION OF HAZARDOUS CONDITIONS</b>	<b>4</b>
<b>4. MANAGEMENT MEASURES</b>	<b>5</b>
4.1. Inspection Program .....	5
4.1.1. Oil and Produced Water Containers and Related Equipment .....	5
4.1.2. Pumps, Valves, and Gauges .....	5
4.1.3. Containment Areas .....	6
4.1.4. Loading / Unloading Areas.....	6
4.1.5. Response Equipment .....	6
4.2. Documentation and Recordkeeping .....	6
4.3. Personnel Training .....	8
4.4. Emergency Coordinator .....	8
4.5. Spill Prevention Briefings.....	8
4.6. Measures for Bulk Storage Containers.....	8
4.6.1. Compatibility of Containers and Product Stored.....	8
4.6.2. Good Engineering Practices for Discharge Prevention .....	9
4.7. Facility Transfer Operations .....	9
4.7.1. Aboveground Valves and Piping .....	9
4.7.2. Maintenance for Flowline and Intra-facility Gathering Lines.....	9
<b>5. CONTINGENCY ACTIONS FOR SPILLS</b>	<b>11</b>
5.1. Discovery of a Spill (All Employees & Contractors) .....	11
5.2. Reporting .....	13
5.3. Spill Clean-Up and Disposal .....	14
<b>6. CONTINGENCY PLAN FOR OTHER EMERGENCIES</b>	<b>16</b>
6.1. Fire .....	16
6.2. Floods.....	16
6.2.1. Preparing for Floods.....	16
6.2.2. During Floods.....	17
6.2.3. After Floods.....	17
6.3. Hurricanes and Tropical Disturbances.....	17
<b>APPENDIX A: FACILITY MAPS</b>	
<b>APPENDIX B: SAFETY DATA SHEETS</b>	
<b>APPENDIX C: BULK CONTAINERS</b>	
<b>APPENDIX D: INSPECTION FORMS</b>	
<b>APPENDIX E: LOADING/UNLOADING PROCEDURES</b>	

**APPENDIX F: TRAINING LOGS**

**APPENDIX G: AGENCY CONTACTS**

**APPENDIX H: NOTIFICATION FORMS**

## 1. INTRODUCTION & FACILITY DESCRIPTION

Burnett Oil Co., Inc. (Burnett) proposes the operation of a crude oil production facility at two locations within the Big Cypress Natural Preserve (BCNP), as follows;

<b>Facility Name:</b>	Nobles Grade Tank Battery
<b>Facility Location:</b>	26.136451, -81.118486 Section 1, Township 50S, Range 32E Collier County, FL
<b>Facility Phone Numbers:</b>	817-332-5108
<b>Owner Name:</b>	Burnett Oil Co., Inc.
<b>Owner Address:</b>	801 Cherry St. #9 Fort Worth, TX 76102
<b>SIC Code:</b>	Oil and Gas Field Services (SIC Code 1389)
<b>Receiving Waters:</b>	Ditches and erosional features to Mallet Slough, to the Turner River Canal, to the Turner River
<b>Distance:</b>	Turner River Canal is approximately 24 miles southwest of the main facility operations
<b>Facility Name:</b>	Tamiami Tank Battery
<b>Facility Location:</b>	25.982839, - 80.881219 Section 36, Township 51S, Range 34E Collier County, FL
<b>Facility Phone Numbers:</b>	817-332-5108
<b>Owner Name:</b>	Burnett Oil Co., Inc.
<b>Owner Address:</b>	801 Cherry St. #9 Fort Worth, TX 76102
<b>SIC Code:</b>	Oil and Gas Field Services (SIC Code 1389)
<b>Receiving Waters:</b>	Levee No. 28 Canal, to Dayhoff Slough, to Mullet Bay
<b>Distance:</b>	Mullet Bay is approximately 26 miles southwest of the main facility operations

Appendix A includes location maps, proposed facility layouts and flow diagrams, as well as maps showing receiving waters.

### 1.1. PROCESS DESCRIPTION

Initially, a heater treater will be used to separate oil, water, gas from the first well. If water production increases to a point the heater treater cannot effectively separate fluids, a free water knockout (FWKO) will be set to remove the bulk of free water from the production stream. Prior to water reaching the storage tanks, it will enter a gun barrel tank in order to allow for any oil carryover to accumulate and be recovered.

Once multiple wells are brought online, individual well testing will be carried out on a scheduled basis using a similar train of equipment. The well being tested will be produced through a smaller FWKO, which will send oil to a dedicated heater treater and water to the gun barrel tank. The second heater treater will also be available to support the bulk production stream should the main heater treater require maintenance. All gas will pass through a scrubber. This scrubber is to prevent any liquid carryover through the gas stream. It will be equipped with a high-level liquid sensor that can shut off the pump in the event there is excessive liquid carryover into the gas stream. This will be crucial to both spill and fire prevention.

## **1.2. SPCC APPLICABILITY**

The Nobles Grade and Tamiami facilities will be subject to the oil spill prevention requirements under 40 CFR 112. As such, Burnett will develop and complete a Spill prevention Control and Countermeasures (SPCC) Plan prior to beginning of operations. The SPCC will be fully implemented prior to the beginning of operations. The SPCC will be attached and made part of this spill contingency plan.

## 2. IDENTIFICATION OF SUBSTANCES

Burnett anticipates that during operations of producing oil and gas from the existing and drilling proposed wells, the substances listed in Table 2-1 will be used or expected to be encountered. Table 2-1 lists each substance by generic product name, its use in operations, its hazardous content, and its hazardous effects. A copy of the Safety Data Sheet (SDS) for each item listed in Table 2-1 is included in Appendix B. The SDS for each substance includes proper safety procedures and protective devices for using each product as well as first aid information in the event of exposure.

Production			
Product	Main Hazardous Ingredient	Potential Effects of Exposure	Use
Crude Oil	Crude oil, petroleum (95-100%)	Skin, eye, and respiratory irritation.	Produced during operations
Produced Water	Water (80-95%)	May cause respiratory irritation if inhaled.	Produced during operations
Drilling Operations			
Product	Main Hazardous Ingredient	Potential Effects of Exposure	Use
Nalco EC1317A	Methanol (30-60%)	Toxic if swallowed, in contact with skin or if inhaled.	Corrosion Inhibitor
SWG Biocide	Sodium hydroxide (<10%)	Harmful in contact with skin.	Biocide
ParaForce 2033	Proprietary fatty acid methyl ester (35-45%)	May cause skin, eye and respiratory irritation.	Paraffin dispersant
Emulsion Breaker 210	Xylene (15-22%)	Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes and skin.	Emulsion breaker
Aquagel	Crystalline silica quartz	May cause cancer by inhalation. Causes damage to organs through prolonged or repeated exposure if inhaled.	Drilling mud additive
X-Tend II	Acrylic polymer	None listed	Drilling mud additive
Caustic/Soda Ash	Sodium carbonate	Eye and skin irritation.	Drilling mud additive
Baralube	None	None listed	Drilling mud additive
Baravis	Cellulose derivative	None listed	Drilling mud additive
Baracarb	None	None listed	Drilling mud additive

Appendix C includes a list of bulk containers holding oil substances at Nobles Grade and Tamiami.

### 3. IDENTIFICATION OF HAZARDOUS CONDITIONS

This section includes information related to identification of any abnormal pressure, temperature, or other hazardous condition existing on-site, or expected to be encountered during operations.

Lost circulation zones can occur throughout the well but are prevalent when drilling through the Boulder zone. This interval occurs between 2300-4000 ft. TVD and is the main waste injection interval in this geographic area. Lost circulation is mitigated by managing mud weights and the use of lost circulation material to help seal off thief zones. Once the Boulder zone has been drilled through, an intermediate casing string will be set and cemented in place to isolate this interval from the remaining drilling operations. Significantly over-pressured zones are not commonly encountered, however, there are some saltwater flows expected. The following BOP program outlines the equipment that will be used to contain well fluids:

Hole Size	Casing Size	Size/Pressure (Annular/Rams)	Bottom to Top Arrangement	Low/High Test Pressures Rams/Annular
17 1/2"	13 3/8" 54.5# J-55	21 3/4" 2M	A	N/A
12 1/4"	9 5/8" 36# J-55	13 5/8" 5M/10M	P/S/B/A	250-3500/250-2000
8 3/4"	7" 26# L-80	13 5/8" 5M/10M	P/S/B/A	250-3500/250-2000
6 1/8"	5 1/2" FJ 17# L-80	13 5/8" 5M/10M	P/S/B/A	250-3500/250-2000

The proposed operations are located within a wooded area prone to forest fires. Severe drought conditions may raise the risk of fires. In addition, the BCNP conducts prescribed fires from time to time. Burnett's operations and the nature of material stored at the two locations may elevate the risk of fire, or complicate response efforts.

Burnett has established a number of procedures and strategies to prevent spills and contain substance spills during construction, drilling and production operations.

## 4.1. INSPECTION PROGRAM

### Construction Phase

All equipment will be inspected daily for any sign of leakage and to ensure they are in good working order. In addition to the inspections, all vehicles will carry a spill response kit.

Construction turbidity fencing will be inspected daily to ensure there are no gaps and fencing is secure. If any wildlife is discovered within the construction area, NPS will be contacted to remove, if necessary.

### Drilling & Production Operations

Burnett's personnel will inspect facilities multiple times during daily shifts, and the facilities will be manned at all times. Burnett's in-depth facility inspection procedure is set up as a checklist-aided monthly walk-around inspection of the equipment. The inspection program provides a mechanism to prevent and detect system malfunctions, equipment deterioration, and operator errors. The inspection program is designed to discover the potential for spill events so that corrective and preventive actions can be taken in a timely manner. Inspection forms can be found in Appendix D.

**The Facility Manager, BOCI personnel, and Burnett employees have been assigned the responsibility to perform routine inspections of the site and oil handling equipment, as well as areas where hazardous substances are used or stored. The designated individuals have the training and authority to:**

- Perform the required inspections;
- Perform necessary evaluations and hazard assessments; and
- Recommend appropriate corrective or remedial actions.

Burnett performs inspections according to the general inspection guidelines outlined below and based on operational experience with the systems and processes involved. The Facility Manager, BOCI personnel, or Burnett employees will evaluate each discovery that indicates a potential deficiency, malfunction, equipment deterioration, or operator error through regular observation of the process and procedures. The level of response and its timing is determined by the nature and severity of the problem identified with the protection of personnel and the prevention of adverse environmental impact being of paramount concern. Corrective actions, as applicable, are implemented to minimize the potential impact and risk.

The facility inspection activities encompass the facility perimeter and those items within the property that are common to all operations. The general inspection activities, include a daily walk-around inspection of:

- Oil and produced water containers and related equipment;
- Pumps, valves, and gauges;
- Containment areas;
- Loading/Unloading areas

#### 4.1.1. Oil and Produced Water Containers and Related Equipment

The Facility Manager or his designated project personnel visually examine all oil and produced water storage containers and related equipment including flanges, pumps, valves, hoses, gauges, hatch covers, and gaskets on a monthly basis for indications of leaks, drips, sweating, damage, and corrosion. Repair of any such items are handled on a priority basis.

#### **4.1.2. Pumps, Valves, and Gauges**

Burnett employees regularly inspect and lubricate associated pump seals and replace seals as required for plant equipment. Valves, operating controls, and other items normally kept in a closed position are observed during operation to ensure they are properly secured. Gauges are inspected regularly and repaired/replaced as needed.

#### **4.1.3. Containment Areas**

The Facility Manager or his designated personnel inspect containment areas monthly for cracks, holes, and oil or pollutant accumulation. If signs of leaks, structural damage, or contamination appear, immediate action to remedy the situation will be taken. Any oil accumulated is disposed of properly as soon as possible.

#### **4.1.4. Loading / Unloading Areas**

Inspections of the various loading and unloading areas are completed on a monthly basis to ensure the areas remain neat, free of obstacles, and clean. Best Management Practices are utilized during loading and unloading activities to ensure oil is handled safely, as detailed in Appendix E.

#### **4.1.5. Response Equipment**

Emergency response equipment and materials are checked during operations to make sure an adequate supply is available for use. The inventory may include but is not limited to:

- Filter fabric and hay bales
- Neutralizing chemicals
- Vacuum trucks
- Oil-dry loose absorbent material
- Absorbent pads
- Nitrile gloves
- Sand bags

BOCI will store absorbent materials on-site to assist with spill containment and cleanup. Absorbent booms will be kept to contain any off-pad spills that may occur. These will be used to contain any oil slick on top of standing water from spreading until a vacuum truck arrives to recover the oil. Absorbent pads will also be kept to clean up any spills inside of containment areas or within the confines of the pad. Water tight chem-proof suits will be onsite in the event workers may have to don them to put absorbent boom material in place. Additional PPE and materials for spill cleanups will also be available, including but not limited to: rubber gloves, plastic boot covers, and bags for absorbent material disposal. A designated decontamination area will be available near the living quarters for personnel to utilize after a spill response effort.

In addition to the above resources, contracted service providers maintain an inventory of equipment to respond to spills.

## **4.2. DOCUMENTATION AND RECORDKEEPING**

Completed inspection checklists and associated reports are provided to the Facility Manager, or other designated personnel, who then ensure that corrective actions are tracked to completion. The inspection

checklist includes important administrative information such as the scope of the inspection, name of the inspector, signature of the inspector, and the date of the inspections. The assessment includes notations of the major observations, actions taken, and the urgency of the required response. The inspector signs the inspection report.

Burnett accumulates and files all completed forms and attachments at the facility. These forms are retained at the facility for a minimum period of three (3) years from the date of inspection.

Burnett trains the Nobles Grade and Tamiami facility's oil-handling personnel on spill prevention and response, good housekeeping, and material management practices. A record of training and attendees are kept at the facility for a minimum period of three (3) years from the date of the training. Appendix F includes a training log that can be used to maintain records.

### 4.3. PERSONNEL TRAINING

Oil-handling personnel are trained in the following:

1. Operation and maintenance of equipment to prevent oil discharges;
2. Oil discharge procedure protocols; and
3. Applicable oil pollution control laws, rules, and regulations.

The spill procedures and the contents of the Spill Plan are discussed on an annual basis.

### 4.4. EMERGENCY COORDINATOR & EMERGENCY CONTACTS

The Facility Manager is accountable for discharge prevention. The Facility Manager reports to Burnett upper management.

Emergency Contacts are as follows:

Facility Manager – TBD Florida	O: M:
(b)(6) VP of Special Services Fort Worth, Texas	O: (b)(6)
(b)(6) Engineering Manager	O: (b)(6)
(b)(6) Regulatory & Government Affairs Manager	O: (b)(6)

### 4.5. SPILL PREVENTION BRIEFINGS

At a minimum, the facility trains oil-handling personnel at least once per year on:

- Operation and maintenance of equipment;
- Spill response procedures and reporting protocol;
- Prevention measures, including spill prevention, preventive maintenance, and any recently developed precautionary measures;
- Pollution control laws and regulations;
- Brief review of the goals and components of this Spill Plan; and

- Brief review of known past discharges and failed or malfunctioning components.

## **4.6. MEASURES FOR BULK STORAGE CONTAINERS**

### **4.6.1. Compatibility of Containers and Product Stored**

All containers are fully compatible with the material held and the environmental conditions to which they can reasonably be expected to be subjected. Drilling fluid additives will be stored on pallets with plastic wrap on top of plastic liners to prevent any contact with the pad surface.

### **4.6.2. Good Engineering Practices for Discharge Prevention**

Burnett has considered good engineering practices within the design of the Nobles Grade and Tamiami facilities to prevent discharges. These practices are as follows:

- The storage capacity of the crude oil tanks and produced water was calculated to handle the expected production rates with the automated response, manual response, and takeaway capacity in mind.
- Burnett has installed high level sensors to generate and transmit an alarm signal to a data system that controls production.
- Tanks and vessels will be placed inside impermeable secondary containments. The tank batteries will be set within a firewall constructed of 24-gauge steel that is 36" in height. The area inside area of the firewalls will be lined with a 60 mil polyurea liner that has a 10 oz. geotextile backing. The vessel containments may utilize a shorter wall (18-24"). Sumps will be installed to pump rainwater out of containments and into gun barrel tanks. There it will make its way to our disposal system.
- Whenever possible, chemical totes/tanks will be stored inside the larger containments and will have smaller containments beneath each tote or tank.
- Transfer pumps will be placed within the boundaries of the large secondary containments on stands. Burnett personnel will place small plastic containments underneath to catch minor drips and keep the larger containment area clean. There will be level and pressure controls installed on certain equipment to shut down pumps and equipment to prevent or minimize spill impacts. There will also be a berm around the pad.

## **4.7. FACILITY TRANSFER OPERATIONS**

### **4.7.1. Aboveground Valves and Piping**

Burnett inspects all valves and piping associated with transfer operations for the general condition of flange joints, valve glands and bodies, drip pans, pipe supports, pumping well polish rod stuffing boxes, bleeder and gauge valves, and other such items on a daily basis.

### **4.7.2. Maintenance for Flowline and Intra-facility Gathering Lines**

Burnett will implement a written program of flowline and intra-facility gathering line maintenance. The maintenance program addresses procedures to:

- Ensure that flowlines and intra-facility gathering lines and associated valves and equipment are compatible with the type of production fluids, their potential corrosivity, volume, and pressure, and other conditions expected in the operational environment;
- Visually inspect and/or test flowlines and intra-facility gathering lines and associated appurtenances on a monthly basis for leaks, oil discharges, corrosion, or other conditions that could lead to a discharge. For

flowlines and intra-facility gathering lines that are not provided with secondary containment in accordance with 112.7(c), the frequency and type of testing must allow for the implementation of a contingency plan.

- Take corrective action or make repairs to any flowlines and intra-facility gathering lines and associated appurtenances as indicated by regularly scheduled visual inspections, tests, or evidence of a discharge.
- Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges associated with flowlines, intra-facility gathering lines, and associated appurtenances.

## 5. CONTINGENCY ACTIONS FOR SPILLS

This section details Burnett's oil and hazardous substance spill response procedures based on the Burnett Spill Response Plan and general best practices during a spill. Burnett trains employees to attempt to stop the continuation of the discharge (closing valves, turning off pumps, isolating a line leak, etc.) if safe to do so. Employees use sorbent materials to contain and dispose of the oil or substance. The discoverer shall respond to the situation based on their knowledge, level of training, and an assessment that the initial response will not put them or others in harm's way or make the situation worse.

### 5.1. DISCOVERY OF A SPILL (ALL EMPLOYEES & CONTRACTORS)

In the event of an oil spill, the discoverer ("PIC", Person in Charge) will immediately:

1. Contact the Incident Commander (IC):
  - a. Primary: Facility Manager, (b)(6)
  - b. Backup: VP of Special Services, (b)(6)
2. The IC will determine what level of action must be taken based on the type of spill:
  - If the IC determines that the incident can be managed with on-site resources by BOCI (Level 3 incident), the below actions will be taken by the PIC.
    - Stop the source of the spill and/or contain the spill if it is safe to do so. The emphasis for the initial spill response is to prevent oil from discharging off-site. This may include:
      - a. Creating berms/barriers with sorbent material, dirt/gravel, or other similar materials; and/or
      - b. Turning off pumps.
    - Ensure the area is safe for all nearby employees. This may include:
      - a. Turning off nearby ignition sources;
      - b. Informing nearby employees of the spill;
      - c. Designating an employee to stand nearby the spill area to warn others until remediation occurs; and/or
      - d. Taping off the area and/or posting signage to warn others.
    - The IC will maintain contact with the PIC until the incident has been resolved.
  - If the IC determines that the incident exceeds facility capabilities to manage the incident (Level 2 incident), the IC activates the necessary members of the Burnett Spill Response Team and Service Providers.
  - If the IC determines that the incident exceeds facility capabilities to manage the incident and extends beyond the site's lease boundary resulting in disruption of local commerce, the IC activates the entire Incident Management Team (IMT).

The Regulatory and Government Affairs Manager will handle official notification of outside contractors and the appropriate government agencies under normal circumstances. Appropriate agencies and phone numbers are included in Appendix G. Depending upon the type of emergency, the Regulatory and Government Affairs Manager may not contact all of these outside agencies.

Table 5-1. Emergency Notification Information

**Facility Manager Phone Number (TBD): ( 817) 332-5108 (24-hour)**

If someone calls the Facility Manager (primary contact) or TBD (back-up) with an emergency, collect the following information from the caller. Do not let the caller disconnect until all of the following information is collected. **Note: the caller shall not put themselves in harm's way to collect the information.**

1. Date and time the emergency event discovered: \_\_\_\_\_
2. Exact location of the emergency event:  
\_\_\_\_\_
3. Type and description of the emergency:  
\_\_\_\_\_  
\_\_\_\_\_
4. Estimate of the amount of material released:  
\_\_\_\_\_
5. Extent of injury or property damage incurred:  
\_\_\_\_\_
6. Extent of the actual or potential environmental damage:  
\_\_\_\_\_  
\_\_\_\_\_
7. Remedial action taken, if any:  
\_\_\_\_\_
8. Name of Notifier/Discoverer:  
\_\_\_\_\_

## 5.2. REPORTING

Oil spills that meet the following criteria do not need reporting to government agencies assuming the release does not physically enter waters of the State, and it is immediately contained, removed, and disposed of in accordance with Florida regulations:

- 10 barrels (420 gallons) or less of crude oil, petroleum condensate, produced water, or a combination thereof, or
- 25 gallons or less of refined crude oil products, including but not limited to, gasoline, diesel motor fuel, aviation fuel, asphalt, road oil, kerosene, fuel oil, and derivatives of mineral, animal, or vegetable oils.

Unreportable releases must be reported internally to Burnett management to ensure that the causes of the incident are investigated and corrective actions, as applicable, are implemented to prevent recurrence.

Unreportable releases will be verbally reported to NPS within 24 hours followed by written notice within 15 days.

Reportable spills to the NPS, NRC and FDEP discharges of oil that meet any of the following criteria:

- Discharges to navigable waters that:
  - Violate applicable water quality standards;
  - Cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines; or
  - Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.
- Releases that threaten to enter waters of the State, including spills in excess of:
  - 10 barrels (420 gallons) of crude oil, petroleum condensate, produced water, or a combination thereof, or
  - 25 gallons of refined crude oil products, including but not limited to, gasoline, diesel motor fuel, aviation fuel, asphalt, road oil, kerosene, fuel oil, and derivatives of mineral, animal, or vegetable oils.

Typically, any amount of oil that reaches a navigable waterway will trigger reporting to government agencies.

In the event of a reportable spill, the Facility Manager (primary) or back-up will notify the following agencies:

1. Call 911 for the Fire Department if immediate response assistance is required.
2. For reportable discharges to navigable waters:
  - a. Call the National Response Center at 1-800-424-8802. After telling them that you want to report a spill, be prepared to supply the following information:
    - i. Your name, company name, company address, and telephone number;
    - ii. Date and time the incident discovered;
    - iii. Location of the incident;
    - iv. Source and cause of the release or spill;
    - v. Types of material(s) released or spilled;
    - vi. Quantity of materials released or spilled;
    - vii. Description of all affected media;
    - viii. Damage or injuries caused by the release;
    - ix. Actions being used to stop, remove, and mitigate the effects of the release

- x. Whether an evacuation may be needed;
    - xi. Names of individuals and/or organizations who have also been contacted and at what times;
    - xii. Weather conditions at the incident location; and
    - xiii. Any other information that may help emergency personnel respond to the incident.
  - b. Submit an Public Notice of Pollution to FDEP using the form on this website:  
<https://floridadep.gov/pollutionnotice>
3. Contained spills equal to or greater than ten (10) barrels
- a. Verbal report to the NPS, FDEP and WOGCC no later than the next business day following discovery of the incident; and,
  - b. Submit a written report within fifteen (15) working days of the spill.

For releases of oil to navigable waters of over 1,000 gallons in a single discharge or more than 42 gallons in each of two discharges within a 12-month period that cause a sheen on surface waters of shoreline, or sludge or emulsion in waters, submit the SPCC Plan to EPA Region IV office within 60 days from the time of the discharge. Provide a description of the spill and detail corrective action taken to prevent a recurrence.

### **5.3. SPILL CLEAN-UP AND DISPOSAL**

After the appropriate government agencies have been notified, then the Facility Manager and the Incident Commander will oversee clean-up operations, disposal activities, incident investigation procedures, and ensure corrective actions are implemented as necessary. Specifically, the Facility Manager will do the following:

1. Oversee and coordinate clean-up operations. Remove any residual substances from the waters of the State within in a timely and diligent manner. This may include:
  - a. Working with Burnett personnel or off-site contractors to clean-up the spill area; or
  - b. Ensuring the spill area remains safe and contained during clean-up operations.
2. Evaluate the recovered material for disposal options. The material should be evaluated to determine if it meets hazardous waste characteristics, which may include review of Safety Data Sheet information or analytical testing. Disposal options may include:
  - a. Hazardous waste
    - i. Store waste in a closed container;
    - ii. Label the container "Hazardous Waste";
    - iii. Evaluate additional Resource Conservation and Recovery Act (RCRA) regulation implications (e.g., generator status, notification requirements, etc.); and/or
    - iv. Contact a waste management company to properly dispose of the waste.
  - b. Non-hazardous waste
    - i. Store waste in a container such that it will not commingle with storm water;
    - ii. Label the container "Non-hazardous Waste"; and/or
    - iii. Contact a waste management company to properly dispose of the waste.
3. Replenish on-site emergency response materials, as necessary.
4. Complete an incident investigation to determine the cause of the spill and whether corrective actions are needed to prevent a reoccurrence of the incident. An incident investigation may include:
  - a. Meeting(s) with Burnett personnel directly involved with the incident;
  - b. Review of equipment inspection / maintenance procedures;
  - c. Review of process / operating conditions at the time of the spill; and/or
  - d. Review of the Spill Plan.

5. Implement corrective actions to prevent a reoccurrence of the incident. Corrective actions may include:
  - a. Updating inspection / maintenance procedures;
  - b. Developing new oil-handling procedures; and/or
  - c. Updating the Spill Plan.

## 6. CONTINGENCY PLAN FOR OTHER EMERGENCIES

---

The precautions and safety actions outlined below apply to all phases of operation including construction, drilling and production operations.

### 6.1. FIRE

#### Construction

Prior to and during construction, Burnett Oil and its contractors will work closely with NPS to monitor any prescribed burns or ongoing fire incidents that could impact the construction operation. In the event of threat of fire during construction, operations will stop until it is deemed safe to resume. Equipment and construction material will be moved offsite to a secure location outside of the impacted area. All personnel will be removed from the site until it is deemed safe for them to return.

#### Drilling

Burnett's Health, Safety and Environmental department will work closely with NPS and all local emergency agencies to develop a site-specific safety and action plan. In the event that it becomes necessary to evacuate the site during drilling operations, the open wellbore will be secured, and equipment will be removed from the site. Precautions will be taken to protect any equipment that cannot be removed in a safe manner. All personnel will be evacuated.

#### Operations

The Nobles Grade and Tamiami tank batteries are located within a wooded area subject to occasional prescribed burns. Burnett will maintain constant coordination with BCNP park personnel and be aware of plans related to any prescribed burn in the area.

In the event a fire could reasonably be expected to reach the Nobles Grade or Tamiami facilities, Burnett will lower crude stocks to a minimum, make sure firebreaks are clear of vegetation or other flammable materials, and wrap-up or hold-off on any non-routine work. Only personnel essential to daily operations will then remain onsite. The Site Manager will maintain communications with the fire's incident command team.

Should the fire become an imminent threat to pass through/around operations, all equipment will be powered down, and wells shut by closing all wellhead valves. Field personnel will evacuate the area as directed by the Site Manager in communication with the incident command.

Should a fire start within the boundaries of Burnett's pad, every effort to safely extinguish it will be made. Fire extinguishers will be placed strategically around the location and inspected regularly. If safely accessible, the pumps will be powered off and wellhead valves closed to cease the flow of the production stream to the facility. Any remote shut down capabilities will be used in the event the site is inaccessible. If the fire is not able to be extinguished quickly by on-site personnel, Burnett's Emergency Response Plan (ERP) will be enacted.

Once Burnett personnel has given clearance to re-enter the site, the Site Manager will take full inventory of the facility and make any repairs necessary.

## 6.2. FLOODS

The following outlines general guidelines to be considered during flood emergencies. As with other emergencies, they involve employee safety, protection of the operations, limiting damage, and returning to normal operations as quickly as possible.

In case a flood emergency is declared by local government, or anticipated due to inclement weather, this plan shall go into effect.

### 6.2.1. Preparing for Floods

In preparation for a potential flood event, the following actions should be taken, as appropriate to the anticipated event:

- Flammable liquid tanks in the expected flood area will be pumped out and filled with water, where practical, to prevent floating. Suction and fill lines shall be closed.
- Gas supplies, pilot flames, and utilities to flood areas will be shut off.
- Designated electric motors will be removed from flood potential areas.
- Vehicles containing flammable liquids will be moved away from flood area.

### 6.2.2. During Floods

Even shallow flood waters present a serious hazard since they may hide trenches, washed out areas, pits, etc. For this reason, any personnel entering any flooded area must work in pairs with a safety rope.

### 6.2.3. After Floods

All piping, tanks and equipment containing hazardous materials that were affected by the flood shall be inspected and tested prior to being placed back in service.

Salvage / Repair for floods shall work according to the following considerations:

- Salvage work following any emergency is an extremely hazardous task. Consideration must be given to damaged lines, flexed structural members, undermined areas, etc. before beginning the job.
- Personnel performing salvage work shall be instructed in potential hazards prior to each day's work.

## 6.3. HURRICANES AND TROPICAL DISTURBANCES

The Atlantic Hurricane Season spans from June 1<sup>st</sup> through November 30<sup>th</sup> each year. During this season, Burnett will continuously monitor any developing system, and assess the risk of impacts to the operations. Since construction will take place during dry season conditions, Burnett does not anticipate any impacts from hurricanes or tropical storms during construction.

Implementation of the emergency actions outlined in this section will depend on the level of risk posed by the system and the following advisories;

- Hurricane/Tropical Storm "Watch" - Hurricane/tropical storm conditions are possible in the specified area, usually within 36 hours.
- Hurricane/Tropical Storm "Warning" - Hurricane/tropical storm conditions are expected in the specified area, usually within 24 hours.

### 6.3.1. Storm Stages and Potential Damages

The Nobles Grade and Tamiami tank batteries are located within an area prone to impacts from tropical disturbances. These disturbances range in intensity and potential damage as shown in the table below.

Type of System	Characteristics	Potential Damages
Tropical Depression	Max. sustained surface wind of 38 mph	No significant damage to structures.
Tropical Storm	Max. sustained surface wind of 39-73 mph	Minor damage to structures, damage to trees, some fences and signs.
Cat 1 Hurricane	Max. sustained surface wind of 74-95 mph	Damage primarily to unanchored mobile homes, shrubbery, trees, poorly constructed signs. No real damage to most building structures. Some coastal road flooding and minor pier damage.
Cat 2 Hurricane	Max. sustained surface wind of 96-110 mph	Some roofing material, door, and window damage of buildings.  Considerable damage to shrubbery and trees with some trees blown down causing power outages. Considerable damage to mobile homes, poorly constructed signs, and piers. Flooding on coastal and low-lying escape routes 2-4 hours before arrival of the hurricane center.
Cat 3 Hurricane	Max. sustained surface wind of 111-129 mph	Structural damage to residences and utility buildings. Damage to shrubbery and trees. Mobile homes and poorly constructed signs are destroyed. Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane. Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris. Terrain continuously lower than 5ft above mean sea level may be flooded inland 8 miles (13 km) or more. Extensive power outages for several days possible.
Cat 4 Hurricane	Max. sustained surface wind of 130-156 mph	Catastrophic damage
Cat 5 Hurricane	Max. sustained surface wind of >156 mph	

### 6.3.2. Stages of Hurricane Alert and Actions

Standard daily operation will include weather monitoring. In the event of a hurricane developing in the Gulf of Mexico, Florida Operations personnel in Naples, Florida and at the corporate headquarters in Fort Worth, Texas will closely monitor the storm track and implement the following stages of emergency preparedness and response beginning four days out from potential impact or landfall.

#### 1. 96 Hours before Possible South Florida Landfall

- BOCI operations and safety personnel put on alert by phone and email. Local and national weather channels will be monitored continuously.
- Develop plans and timetable for suspending operations within 48 hours. NPS and DEP will be notified of the timetable for suspending operations.
- BOCI will stay in close contact with NPS for updates on Preserve protocols.

#### 2. 72 Hours Before Possible South Florida Landfall

- Continuous monitoring of local and national weather.
- Plans underway to suspend operations based on timetable.
- Status updates to NPS and DEP.

#### 3. 48 Hours Before Possible South Florida Landfall

- Continuous monitoring of local and national weather.
- Plans underway to suspend operations based on timetable.
- Status updates to NPS and DEP.

#### 4. 24 Hours Before Possible South Florida Landfall

- Continuous monitoring of local and national weather.
- Preparations for evacuation of any remaining personnel at Nobles Grade and Tamiami
- Operations suspended and all personnel evacuated.
- Notification of operations shutdown and status to NPS and DEP

### 6.3.3. Operation Procedures for Impending South Florida Landfall

Upon notice of an impending hurricane landfall, BOCI will implement the following procedures:

#### 1. Routine Field Operations

- Suspend pumping operations
- Close and flag all block valves at wellhead
- Secure all additional tanks
- Secure or remove all loose equipment, tools, and vehicles
- Secure all hazardous material storage areas, and remove/relocate hazardous materials to a safe location
- For Category 3 and above, empty storage tanks, if possible.
- Secure all wellheads, valves, and other appurtenances

- Evacuate personnel

## 2. Pipeline Operations

- Close all manifold valves

## 3. Well Pad and Production Facility

- Inspect and secure company trailer and any storage facilities
- Fill all tanks to at least 30% capacity, if possible
- Fill wastewater holding tank with fresh water to capacity, if possible
- Remove any portable toilets
- Remove vehicles from premises

## 4. Drilling Operations

- Notify contactors of shut down schedule and begin shut down and removal of equipment within 48 hours projected landfall.
- Pull drill pipe, fill well bore with drilling fluid and close BOP
- Lay down rig and secure or remove offsite
- Secure all loose equipment and materials or remove to an offsite secure location
- Remove all portable toilets and secure all field trailers
- Top off all diesel tanks and fill holding tanks with water.

## 5. Workover Operations

- Notify contactors of shut down schedule and begin shut down and removal of equipment within 48 hours projected landfall.
- Remove tools and equipment, close BOP or main block valve on tree
- Lay down, secure or remove rig to an off site safe location
- Secure all lose materials and equipment or remove from location
- Remove all portable toilets and secure all field trailers

### 6.3.4. Resumption of Operations

After storm has passed, Burnett personnel will contact the NPS to determine if conditions are safe for the return of personnel in the Preserve. Personnel will return to the sites once conditions are deemed safe to conduct inspections to determine extent of any damages.

#### 1. Inspections

- Burnett will conduct inspection of the facility and all equipment to determine type and severity of damage
- All tanks will be inspected to ensure integrity of vessels is intact

#### 2. Repairs

- All necessary equipment repairs will be made as soon as possible.
- If any storage tanks received damage during the storm, all fluid will be removed from compromised tank until repairs can be made or tank replaced.

- Secure any communications towers and related equipment

3. **Spills & Environmental Impacts**

- Immediate steps will be taken to contain any spills that resulted from hurricane damage
- Any environmental impacts from storm damage will be assessed immediately and steps taken to minimize and control any impacts.

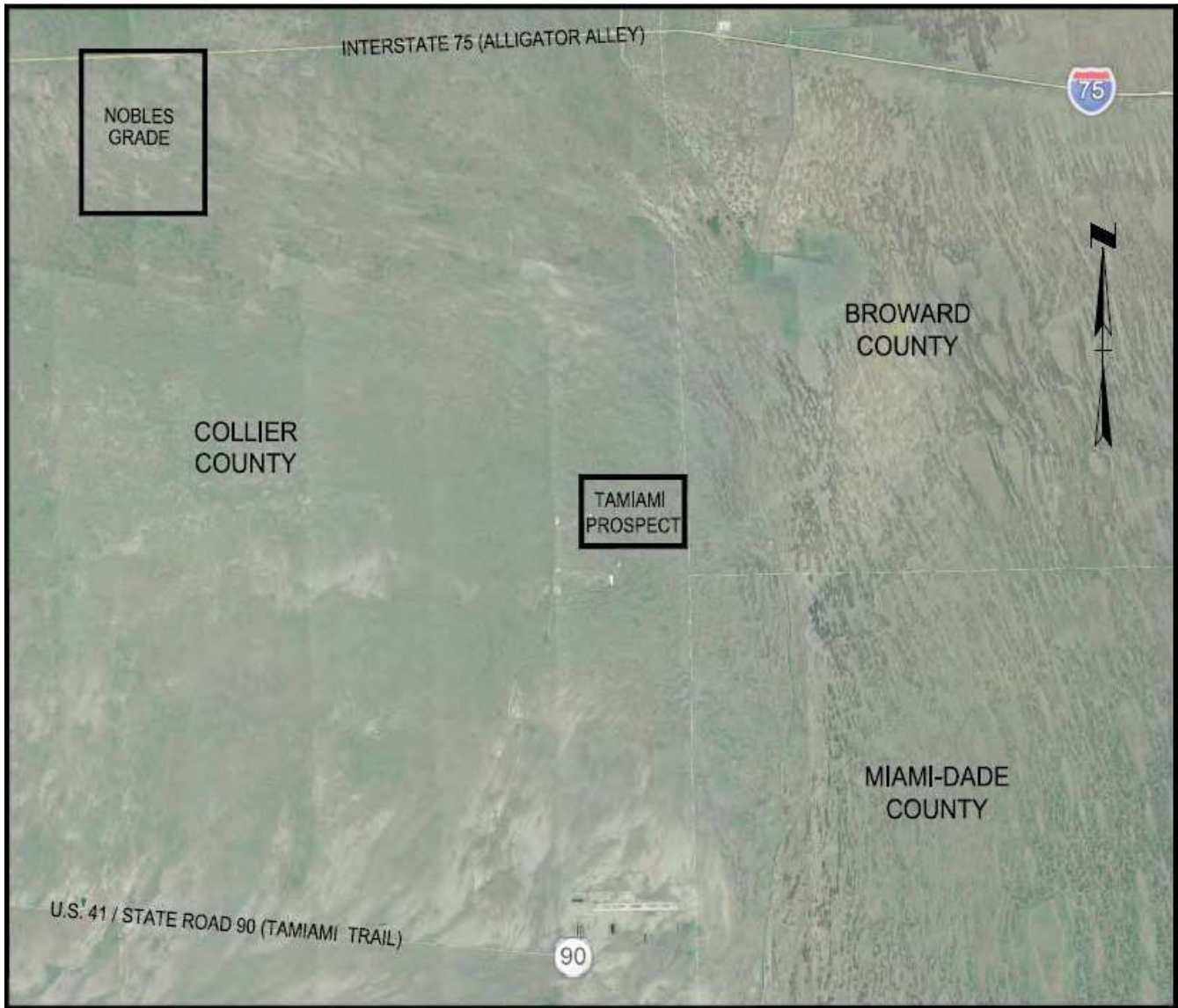
4. **Resuming Production**

- Verify adequate storage levels and takeaway capacity is available.
- Prior to starting up pump(s), verify no leaks are present and all necessary valves are in their correct position for operation.
- Monitor levels, pressures, and control valve operation until it is verified all equipment is working properly.

## APPENDIX A: FACILITY MAPS

---

## Nobles Grade and Tamiami Facilities- Location Map



LOCATION MAP

## Location of Receiving Waters and Anticipated Flow Paths



## APPENDIX B: SAFETY DATA SHEETS

---

# MATERIAL SAFETY DATA SHEET

## CRUDE OIL

MSDS No. **RS296**  
Version: 5  
Rev. Date: **05/13/2002**

**IMPORTANT:** Read this MSDS before handling and disposing of this product and pass this information on to employees, customers, and users of this product.

### 1. PRODUCT and COMPANY IDENTIFICATION

<b>Material Identity</b>	Crude Oil	
<b>Trade Name(s)</b>	Oriente, Cano Limon, Line 63, Shell-Ventura, SJV Light, Rainbow, West Texas Inter-Cushing, Peace River-Canadian, Federated Crude-Canadian, Pembina Crude-Canadian, Forcados, Cabinda, Basrah Light, Basrah, Arab Medium, Elang Crude, Girassol	
<b>Other Name(s)</b>	Earth Oil, Petroleum Oil, Rock Oil, Zafiro	
<b>Chemical Description</b>	This material is a C1 to C50 hydrocarbon liquid which contains approximately .9 to 2.8 wt% sulfur compounds	
<b>Manufacturer's Address</b>	BP West Coast Products LLC Carson Business Unit 1801 E. Sepulveda Boulevard Carson, California 90749-6210	BP West Coast Products LLC Cherry Point Business Unit 4519 Grandview Road Blaine, Washington 98230
<b>Telephone Numbers</b>	Emergency Health Information: Emergency Spill Information: Other Product Information:	1 (800) 447-9735 1 (800) 424-9300 CHEMTREC (USA) 1 (866) 4BP-MSDS 1 (866) 427-6737 Toll Free - North America Email: bpcare@bp.com

### 2. COMPONENTS and EXPOSURE LIMITS

1		2		ACGIH	Exposure Limits OSHA		
<u>Component</u>	<u>CAS No.</u>	<u>% Composition By Volume</u>		<u>TLV</u>	<u>PEL</u>	<u>Units</u>	<u>Type</u>
CRUDE OIL, PETROLEUM	8002-05-9	EQ	100	N/AP	N/AP		
which contains:							
BUTANE	106-97-8	AP	0.8 to 1	800	800	pm	TWA
HEXANE (N-HEXANE)	110-54-3	AP	0.3 to 1	50 skin	50	ppm	TWA
ISOPENTANE	78-78-4	AP	0.3 to 1.5	N/AP 600	750 600	ppm ppm	STEL TWA
PENTANE	109-66-0	AP	1.5 to 2.5	N/AP 600	750 600	ppm ppm	STEL TWA
Other applicable exposure guidelines:							
COAL TAR PITCH VOLATILES, AS BENZENE SOLUBLES <sup>(4)</sup>	65996-93-2			0.2	0.2	mg/m3	TWA
OIL MIST, MINERAL	8012-95-1			10 5	N/AP 5	mg/m3 mg/m3	STEL TWA
STODDARD SOLVENT	8052-41-3			100	100	ppm	TWA

Stoddard Solvent exposure limits are listed as an exposure guideline for hydrocarbon vapors that may be similar

to those derived from crude oil.

Print Date: 01/01/2002

\*\*\*FOR "DISCLAIMER OF LIABILITY", SEE THE STATEMENT ON LAST PAGE\*\*\*

Page 1 of 7

Since specific exposure standards or control limits have not been established for this material, the exposure limits shown here are suggested as minimum control guidelines.

<sup>1</sup> Carcinogen displayed after Component Name. Listed by <sup>(1)</sup> NTP, <sup>(2)</sup> IARC, <sup>(3)</sup> OSHA, <sup>(4)</sup> Other

<sup>2</sup> See Abbreviations on last page

<sup>3</sup> The OSHA exposure limits were changed in 1993 due to a federal court ruling. ARCO has chosen to list the 1989 OSHA exposure limits in this document as they are generally more stringent and therefore more protective than the current exposure limits. (Refer to 29 CFR 1910.1000).

---

### 3. HAZARD IDENTIFICATION

---

#### IMMEDIATE HAZARDS

##### **DANGER**

**HIGHLY FLAMMABLE! OSHA/NFPA Class 1B flammable liquid. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME! CONTAINS PETROLEUM DISTILLATES!** Avoid breathing vapors or mists. Use only with adequate ventilation. If swallowed, do not induce vomiting since aspiration into the lungs may cause chemical pneumonia. Obtain prompt medical attention.

May cause irritation or more serious skin disorders! May be harmful if inhaled! May cause irritation of the nose, throat, and lungs, headache, dizziness, drowsiness, loss of coordination, fatigue, nausea and labored breathing. May cause irregular heartbeats. Avoid prolonged or repeated liquid, mist, and vapor contact with eyes, skin, and respiratory tract.

Wash hands thoroughly after handling.

Sulfur compounds in this material may decompose to release hydrogen sulfide gas which may accumulate to potentially lethal concentrations in enclosed air spaces. Vapor concentrations of hydrogen sulfide above 50 ppm, or prolonged exposure at lower concentrations, may saturate human odor perceptions so that the smell of gas may not be apparent. **DO NOT DEPEND ON THE SENSE OF SMELL TO DETECT HYDROGEN SULFIDE!**

Long-term tests show that similar crude oils have produced skin tumors on laboratory animals.

Crude oils contain some polycyclic aromatic hydrocarbons which have been shown to be carcinogenic after prolonged or repeated skin contact in laboratory animals.

---

#### Routes of Exposure

#### Signs and Symptoms

##### **Inhalation (Primary)**

Vapors or mists from this material, at concentrations greater than the recommended exposure limits in Section 2, can cause irritation of the nose, throat, and lungs, headache, dizziness, drowsiness, loss of coordination, fatigue, nausea and labored breathing. Airborne concentrations above the recommended exposure limits are not anticipated during normal workplace activities due to the slow evaporation of this material at ambient temperatures.

Exposure to moderate airborne concentrations of hydrogen sulfide (less than 50 ppm) can result in irritation of the eyes, nose and throat, headache, dizziness, shortness of breath, nausea and nervousness. Exposure to hydrogen sulfide vapor above 200 ppm may cause irritation of mucous membranes, inflammation of the lungs, accumulation of fluid in the lungs, irregular heartbeats, unconsciousness with convulsions or impaired breathing with suffocation. Exposure to higher concentrations of hydrogen sulfide vapor (above 500 ppm) may cause rapid death.

##### **Eye Contact**

May cause slight eye irritation.

##### **Skin Contact**

Moderate skin irritation may occur upon short-term exposure.

Exposure to sunlight may increase the degree of skin irritation.

Absorption through the skin may occur and produce toxic effects (see Summary of Chronic Hazards).

##### **Ingestion**

May cause irritation of the mouth, throat and gastrointestinal tract leading to nausea, vomiting, diarrhea, and restlessness. May cause headache, dizziness, drowsiness, loss of coordination, fatigue, nausea and labored breathing.

**ASPIRATION HAZARD:** Aspiration into the lungs may cause chemical pneumonia. This material can enter the lungs during swallowing or vomiting and may cause lung inflammation and damage which in severe cases may be fatal.

---

**Summary of Chronic Hazards and Special Health Effects**

Personnel with preexisting central nervous system (CNS) disease, skin disorders, or chronic respiratory diseases should be evaluated by an appropriate health professional before exposure to this material.

Prolonged/repeated skin exposure, inhalation or ingestion of this material may result in adverse dermal or systemic effects. Avoid prolonged or repeated exposure. May be harmful if absorbed through the skin. Prolonged or repeated contact may create cancer risk, organ damage, and adversely affect reproduction, fetal development and fetal survival. Avoid all skin contact.

Neurotoxic effects have been associated with n-hexane, a component of this material. Avoid prolonged or repeated exposure.

See Section 11 for Additional Toxicological Information.

**4. EMERGENCY and FIRST AID**

<b>Inhalation</b>	Immediately remove personnel to area of fresh air. For respiratory distress, give oxygen, rescue breathing, or administer CPR (cardiopulmonary resuscitation) if necessary. Obtain prompt medical attention.
<b>Eye Contact</b>	Flush eyes with clean, low-pressure water for at least 15 minutes, occasionally lifting the eyelids. If pain or redness persists after flushing, obtain medical attention.
<b>Skin Contact</b>	Immediately remove contaminated clothing. Wash affected skin thoroughly with soap and water. If irritation persists, obtain medical attention.
<b>Ingestion</b>	Do not induce vomiting since aspiration into the lungs may cause lipid pneumonia. Obtain prompt medical attention.

**Emergency Medical Treatment Procedures**

See above procedures. Personnel with pre-existing central nervous system disease, skin disorders, chronic respiratory diseases, or impaired liver or kidney function should avoid exposure to this product.

**5. FIRE and EXPLOSION**

**Flash Point (Method)\*** Based on NFPA Petroleum, Crude AP 20°F to 90°F  
**Autoignition Temperature (Method)\*** N/DA  
**Flammable Limits (% Vol. in Air\*)** Lower AP 1 +  
Upper AP 8 +

\* At Normal Atmospheric Temperature and Pressure

+ Based on NFPA 325

**NFPA Hazard Rating:**  
**Health:** 2 = Moderate  
**Fire:** 3 = High  
**Reactivity:** 0 = Insignificant  
**Special:**

**Fire and Explosion Hazards**

**HIGHLY FLAMMABLE!** This material releases flammable vapors at or below ambient temperatures. When mixed with air in certain proportions and exposed to an ignition source, these vapors can burn in the open or explode in confined spaces.

Flammable vapors may travel long distances along the ground before reaching a point of ignition and flashing back.

Open top tanks involved in a fire have a potential for "boil-over" if water or water-in-oil emulsion is at the bottom of the tank. Boil-over may result in a large expulsion of burning oil from the tank, greatly increasing the fire area.

**Extinguishing Media**

Foam, Dry chemical, Carbon dioxide (CO2)

Water and water fog can cool the fire but may not extinguish the fire.

**Special Firefighting Procedures**

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of combustion products and oxygen deficiencies. Cool tanks and containers exposed to fire with water. If firefighters cannot work upwind to the fire, respiratory protective equipment must be worn unless and until atmospheric monitoring indicates that such protection is not required. Improper use of water and extinguishing media containing water may cause frothing which can spread the fire over a larger area. Water fog or spray are of value for cooling tank shells and surfaces exposed to fire, but may not achieve extinguishment.

---

## 6. ACCIDENTAL RELEASE MEASURES

---

<b>Precautions if Material is Spilled or Released</b>	Contain spill, evacuate non-essential personnel, and safely stop flow. On hard surfaces, spilled material may create a slipping hazard. Equip cleanup crews with proper protective equipment (as specified in Section 8) and advise of hazards. Clean up by recovering as much spilled or contaminated materials as possible and placing into closed containers. Consult with an environmental professional for the federal, state and local cleanup and reporting requirements for spills and releases.
---	--

---

## 7. HANDLING and STORAGE

---

<b>Handling, Storage and Decontamination Procedures</b>	<p>Store and transport in accordance with all applicable laws. <b>KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME! KEEP CONTAINERS CLOSED, PLAINLY LABELED AND OUT OF CLOSED VEHICLES!</b> Containers should be able to withstand pressures expected from warming or cooling in storage. Ground all drums and transfer vessels when handling. Store in cool (80°F or below), well-ventilated location. All electrical equipment in storage and/or handling areas should be installed in accordance with applicable requirements of the National Electrical Code (NEC).</p> <p><b>KEEP OUT OF REACH OF CHILDREN!</b></p> <p>Empty containers retain some liquid and vapor residues, and hazard precautions must be observed when handling empty containers.</p> <p>For determining National Electrical Code (NEC) Hazardous (Classified) location requirements for electrical installations, consider this material Class 1, Group D.</p>
---	--

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

---

<b>Engineering Controls</b>	Where possible, use adequate ventilation to keep vapor and mist concentrations of this material below the Occupational Exposure Limits shown in Section 2. Electrical equipment should comply with National Electrical Code (NEC) standards (see Section 7).
-----------------------------	--

<b>Respiratory</b>	Where there is potential for exposure to hydrogen sulfide gas in excess of the permissible exposure limit, a NIOSH/MSHA-approved supplied-air respirator operated in positive pressure mode should be worn.
--------------------	---

If hydrogen sulfide gas is not present in excess of permissible exposure limits, a NIOSH/MSHA-approved air-purifying respirator with an organic vapor cartridge may be permissible under certain circumstances where airborne concentrations of hydrocarbon vapor may exceed the exposure limits in Section 2. Where work conditions may generate airborne mists of the material, also use a high-efficiency particulate pre-filter. Consult a health and safety professional for guidance in respirator selection. Respirator use should comply with OSHA 29 CFR 910.134.

**CAUTION:** The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of the air-purifying respirator.

<b>Eyes</b>	Eye protection should be worn. If there is potential for splashing or spraying, chemical protective goggles and/or a face shield should be worn. If contact lenses are worn, consult an eye specialist or a safety professional for additional precautions. Suitable eye wash water should be available in case of eye contact with this material.
-------------	--

<b>Skin</b>	<p>Avoid all skin contact with this material. If conditions of use present any potential for skin contact, clean and impervious clothing such as gloves, apron, boots, and facial protection should be worn. Neoprene, Nitrile, Butyl Rubber or Viton glove material is recommended. When working around equipment or processes which may create the potential for skin contact, full body coverage should be worn, which consist of impervious boots and oil-resistant coated Tyvek suit or other impervious jacket and pants.</p> <p>Non-impervious clothing which accidentally becomes contaminated with this material should be removed promptly and not reworn until the clothing is washed thoroughly and the contamination is effectively removed. Discard soaked leather goods.</p>
-------------	---

**Other Hygienic and Work Practices**

Use good personal hygiene practices. If skin contact should occur, material should be removed from the skin with a waterless hand cleaner, and the affected area should then be washed with a mild soap and water. Wash hands and other exposed areas thoroughly before eating, drinking, smoking or using toilet facilities.

**9. PHYSICAL and CHEMICAL PROPERTIES**

<b>Boiling Point:</b>	AP -54°F to 1100°F
<b>Viscosity Units, Temp. (Method):</b>	N/DA
<b>Dry Point:</b>	N/AP
<b>Freezing Point:</b>	N/DA
<b>Vapor Pressure, Temp. (Method):</b>	AP 1 to 2 at 100°F (REID-PSIA)
<b>Volatile Characteristics:</b>	Appreciable
<b>Specific Gravity (H<sub>2</sub>O = 1 @ 39.2°F):</b>	AP 0.88
<b>Vapor Sp. Gr. (Air = 1.0 @ 60°F - 90°F):</b>	N/DA
<b>Solubility in Water:</b>	Negligible
<b>PH:</b>	N/AP
<b>Appearance and Odor:</b>	Thick light yellow to dark black colored liquid. Petroleum hydrocarbon odor.
<b>Other Physical and Chemical Properties:</b>	Total sulfur = approx. 1.1% - 2.8% Hydrogen sulfide content is less than 5 ppm dissolved in liquid Vanadium = approx. 210 ppm

**10. STABILITY and REACTIVITY**

<b>Stability</b>	Stable
<b>Hazardous Polymerization</b>	Not expected to occur.
<b>Other Chemical Reactivity</b>	N/AP

<b>Conditions to Avoid</b>	Heat, sparks, and open flame.
<b>Materials to Avoid</b>	Strong acids, alkalis, and oxidizers such as liquid chlorine and oxygen.
<b>Hazardous or Decomposition Products</b>	Burning or excessive heating may produce carbon monoxide and other harmful gases or vapors including oxides of sulfur and nitrogen.

**11. TOXICOLOGICAL INFORMATION**

<b>Toxicological Information</b>	The information found in this section is written for medical, toxicology, occupational health and safety professionals. This section provides technical information on the toxicity testing of this or similar materials or its components. If clarification of the technical content is needed, consult a professional in the areas of expertise listed above.
----------------------------------	---

<b>Prolonged/Repeated Exposures</b>	IARC has determined there is "limited evidence for the carcinogenicity in experimental animals of crude oil" and "inadequate evidence for the carcinogenicity in humans of crude oil." IARC concludes that "crude oil is not classifiable as to its carcinogenicity to humans (Group 3)."  Crude oil administered orally to pregnant rats during gestation produced increased number of resorptions and decrease in fetal weight and length.
-------------------------------------	--

Exposure to N-hexane at concentrations considerably higher than the current permissible exposure limit has reportedly been associated with peripheral neuropathy.

---

**12. ECOLOGICAL INFORMATION**

---

Not Available

---

**13. DISPOSAL CONSIDERATIONS**

---

<b>Waste Disposal Methods</b>	Maximize recovery for reuse or recycling. Consult environmental professional to determine if state or federal regulations would classify spilled or contaminated materials as a hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities. Comply with all federal, state and local laws pertaining to waste management.
-------------------------------	--

---

**14. TRANSPORT INFORMATION**

---

<b>UN Proper Shipping Name</b>	Petroleum crude oil
<b>UN Hazard Class</b>	3
<b>UN Number</b>	UN1267
<b>UN Packing Group</b>	PGI

---

**15. REGULATORY INFORMATION**

---

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA), TITLE III****Section 311/312 Hazard Categories:**

Immediate (acute) health hazard  
Delayed (chronic) health hazard  
Fire hazard

No chemicals in this product exceed the threshold reporting level established by SARA Title III, Section 313 and 40 CFR 372.

**TOXIC SUBSTANCES CONTROL ACT (TSCA)**

All components of this product are listed on the TSCA Inventory.

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA)**

This material is covered by CERCLA's PETROLEUM EXEMPTION.

(Refer to 40 CFR 307.14)

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 - PROPOSITION 65****PROP 65 WARNING LABEL:**

Chemicals known to the State to cause cancer, birth defects, or other reproductive harm are found in gasoline, crude oil, and many other petroleum products and their vapors, or result from their use. Read and follow label directions and use care when handling or using all petroleum products.

**WARNING:**

This product contains the following chemical(s) listed by the state of California as known to cause cancer or birth defects or other reproductive harm.

**MINERAL OILS, UNTREATED <sup>(C)</sup>**

Other Prop 65 chemicals will result under certain conditions from the use of this material. For example, burning fuels produces combustion products including carbon monoxide, a Prop 65 reproductive toxin.

<sup>(C)</sup> = Carcinogen

---

**16. OTHER INFORMATION**

---

**General  
Comments**

The information and conclusions herein reflect normal operating conditions and may be from sources other than direct test data on the mixture itself.

## Abbreviations:

EQ = Equal

AP = Approximately

N/P = No Applicable Information Found

LT = Less Than

UK = Unknown

N/AP = Not Applicable

GT = Greater Than

TR = Trace

N/DA = No Data Available

Prepared by: Product Stewardship

**Disclaimer of Liability**

The information in this MSDS was obtained from sources which we believe are reliable. **HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.**

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.**

This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.



SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET

**Produced Water**

Date of Preparation: August 30, 2013

**Section 1: IDENTIFICATION**

**Product Name:** Produced Water

**Synonyms:** Not available.

**Product Use:** Waste stream.

**Restrictions on Use:** Not available.

**Manufacturer/Supplier:** Pengrowth Energy Corporation  
2100, 222 – 3rd Avenue S.W.  
Calgary, AB T2P 0B4

**Phone Number:** (403) 233-0224

**Emergency Phone:** CANUTEC (613) 996-6666

**Date of Preparation of SDS:** August 30, 2013

**Section 2: HAZARD(S) IDENTIFICATION****GHS INFORMATION**

**Classification:** Not hazardous according to OSHA criteria (29 CFR 1910.1200).

**LABEL ELEMENTS**

**Hazard** None.

**Pictogram(s):**

**Signal Word:** None.

**Hazard Statements:** Not applicable.

**Precautionary Statements**

**Prevention:** Not applicable.

**Response:** Not applicable.

**Storage:** Not applicable.

**Disposal:** Not applicable.

**Hazards Not Otherwise Classified:** Not applicable.

**Ingredients with Unknown Toxicity:** None.

This material is not considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

**Section 3: COMPOSITION / INFORMATION ON INGREDIENTS**

<b>Ingredient(s)</b>	<b>Common name / Synonyms</b>	<b>CAS No.</b>	<b>% wt./wt.</b>
Water	Not available.	7732-18-5	80 - 95
Hydrogen sulfide (H <sub>2</sub> S)	Not available.	7783-06-4	< 0.7
Petroleum	Not available.	8002-05-9	0.1 - 0.3

**Section 4: FIRST-AID MEASURES**

- Inhalation:** If inhaled: Call a poison center or doctor if you feel unwell.
- Acute and delayed symptoms and effects:** May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. This product may contain small amounts of Hydrogen sulphide which may accumulate in confined spaces. Hydrogen sulphide may cause symptoms such as digestive upset and loss of appetite, loss of sense of smell and pulmonary edema. At 500-1000 ppm Hydrogen sulphide may cause respiratory paralysis, collapse and death without rescue.
- Eye Contact:** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center or doctor if you feel unwell.
- Acute and delayed symptoms and effects:** May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.
- Skin Contact:** If on skin: Wash with plenty of soap and water. Call a poison center or doctor if you feel unwell.
- Acute and delayed symptoms and effects:** May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.
- Ingestion:** If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
- Acute and delayed symptoms and effects:** May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.
- General Advice:** In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).
- Note to Physicians:** Symptoms may not appear immediately. For inhalation of Hydrogen Sulphide, consider oxygen.

**Section 5: FIRE-FIGHTING MEASURES****FLAMMABILITY AND EXPLOSION INFORMATION**

Not flammable or combustible by OSHA/WHMIS criteria. When heated, this material may evolve toxic and flammable Hydrogen sulphide.

- Sensitivity to Mechanical Impact:** This material is not sensitive to mechanical impact.
- Sensitivity to Static Discharge:** This material is not sensitive to static discharge.

**MEANS OF EXTINCTION**

- Suitable Extinguishing Media:** Small Fire: Dry chemical, CO<sub>2</sub>, water spray or regular foam.
- Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

**Unsuitable Extinguishing Media:** Not available.

**Products of Combustion:** Oxides of carbon. Oxides of sulphur. Aldehydes.

**Protection of Firefighters:** Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause pollution. Hydrogen sulphide is heavier than air and may collect in low lying areas and confined spaces. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

#### Section 6: ACCIDENTAL RELEASE MEASURES

**Emergency Procedures:** Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

**Personal Precautions:** Do not touch or walk through spilled material. Use personal protection recommended in Section 8. Don full-face, positive pressure, self-contained breathing apparatus.

**Environmental Precautions:** Keep out of drains, sewers, ditches, and waterways.

**Methods for Containment:** Stop leak if without risk. Do not flush to sewer or allow to enter waterways.

**Methods for Clean-Up:** Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

**Other Information:** See Section 13 for disposal considerations.

#### Section 7: HANDLING AND STORAGE

##### Handling:

Do not swallow. Harmful concentrations of hydrogen sulfide (H<sub>2</sub>S) gas can accumulate in excavations and low-lying areas as well as the vapour space of storage and bulk transport compartments. See Section 8 for information on Personal Protective Equipment.

##### Storage:

Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children. Head spaces in storage containers may contain toxic hydrogen sulphide gas. Structural materials and lighting and ventilation systems should be corrosion resistant.

#### Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

##### Exposure Guidelines

##### Component

Water [CAS No. 7732-18-5]

**ACGIH:** No TLV established.

**OSHA:** No PEL established.

Hydrogen sulphide [CAS No. 7783-06-4]

**ACGIH:** 1 ppm (TWA); 5 ppm (STEL); (2009)

**OSHA:** 20 ppm (C); 50 ppm (Peak) (Maximum duration: 10 mins. once only if no other meas. exp. occurs.)

10 ppm (TWA); 15 ppm (STEL) [Vacated]

Crude oil [CAS No. 8002-05-9]

**ACGIH:** A2; Exposure by all routes should be carefully controlled to levels as low as possible (2009); For Mineral oil, excluding metal working fluids; Poorly and mildly refined

**OSHA:** 500 ppm (TWA), 2000 mg/m<sup>3</sup> (TWA);  
400 ppm (TWA) [Vacated];

**PEL:** Permissible Exposure Limit

**TLV:** Threshold Limit Value

**TWA:** Time-Weighted Average

**STEL:** Short-Term Exposure Limit

**C:** Ceiling

**Engineering Controls:**

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**



**Eye/Face Protection:**

Safety glasses are recommended. Use equipment for eye protection that meets the standards referenced by OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

**Hand Protection:**

Wear protective gloves. Consult manufacturer specifications for further information.

**Skin and Body Protection:**

Wear protective clothing.

**Respiratory Protection:**

If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

**General Hygiene Considerations:**

Handle according to established industrial hygiene and safety practices.

**Section 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance:</b>	Dirty coloured liquid.
<b>Colour:</b>	Grey to black.
<b>Odour:</b>	"Rotten egg" smell when dissolved hydrogen sulphide gas is present.
<b>Odour Threshold:</b>	Not available.
<b>Physical State:</b>	Liquid.
<b>pH (as supplied):</b>	4.9
<b>Melting Point / Freezing Point:</b>	0 °C (32 °F)
<b>Initial Boiling Point:</b>	Not available.
<b>Boiling Point:</b>	100 °C (212 °F)
<b>Flash Point:</b>	Not available.
<b>Evaporation Rate:</b>	Not available.
<b>Flammability (solid, gas):</b>	Not applicable.
<b>Lower Flammability Limit:</b>	Not available.
<b>Upper Flammability Limit:</b>	Not available.
<b>Vapor Pressure:</b>	6.13 kPa at 24 °C (75.2 °F)
<b>Vapor Density:</b>	Not available.
<b>Relative Density:</b>	1 to 1.2 (Water = 1) at 15 °C (59 °F)
<b>Solubilities:</b>	Soluble in water.
<b>Partition Coefficient: n-Octanol/Water:</b>	Not available.
<b>Auto-ignition Temperature:</b>	Not available.
<b>Decomposition Temperature:</b>	Not available.
<b>Viscosity:</b>	Not available.
<b>Percent Volatile, wt. %:</b>	70 to 100
<b>VOC content, wt. %:</b>	Not available.
<b>Density:</b>	Not available.
<b>Coefficient of Water/Oil Distribution:</b>	> 1

**Section 10: STABILITY AND REACTIVITY**

<b>Reactivity:</b>	Contact with incompatible materials. Sources of ignition. Exposure to heat.
<b>Chemical Stability:</b>	Stable under normal storage conditions.
<b>Possibility of Hazardous Reactions:</b>	None known.
<b>Conditions to Avoid:</b>	Contact with incompatible materials. Sources of ignition. Exposure to heat.
<b>Incompatible Materials:</b>	Strong oxidizers.
<b>Hazardous Decomposition Products:</b>	Hazardous sulphur dioxide, and related oxides of sulphur may be generated upon combustion.

**Section 11: TOXICOLOGICAL INFORMATION**
**EFFECTS OF ACUTE EXPOSURE**
**Product Toxicity**

**Oral:** Not available.

**Dermal:** Not available.

**Inhalation:** Not available.

**Component Toxicity**

Component	CAS No.	LD <sub>50</sub> oral	LD <sub>50</sub> dermal	LC <sub>50</sub>
Water	7732-18-5	Not available.	Not available.	> 90000 µl/kg (rat); 4H
Hydrogen sulphide	7783-06-4	Not available.	Not available.	444 ppm (rat); 4H
Crude oil	8002-05-9	4300 mg/kg (rat)	Not available.	Not available.

**Likely Routes of Exposure:** Eye contact. Skin contact. Inhalation. Ingestion.

**Target Organs:** Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Bone marrow. Liver. Reproductive system. Nervous system.

**Symptoms (including delayed and immediate effects)**

**Inhalation:** May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. This product may contain small amounts of Hydrogen sulphide which may accumulate in confined spaces. Hydrogen sulphide may cause symptoms such as digestive upset and loss of appetite, loss of sense of smell and pulmonary edema. At 500-1000 ppm Hydrogen sulphide may cause respiratory paralysis, collapse and death without rescue.

**Eye:** May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

**Skin:** May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

**Ingestion:** May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

**Skin Sensitization:** Not available.

**Respiratory Sensitization:** Not available.

**Medical Conditions Aggravated By Exposure:** Not available.

#### **EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)**

**Target Organs:** Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Bone marrow. Liver. Reproductive system. Nervous system.

**Chronic Effects:** Prolonged or repeated contact may dry skin and cause irritation. Hydrogen sulphide may reduce lung function; cause neurological effects such as headaches, nausea, depression and personality changes; eye and mucous membrane irritation: damage to cardiovascular system. Repeated dermal application of crude oils in rats produced systemic toxicity in blood, liver, thymus and bone marrow.

**Carcinogenicity:** Product is not classified as a carcinogen. See Component Carcinogenicity table below for information on individual components. Lifetime skin painting studies in animals with whole crude oils and crude oil fractions have produced tumours in animals following prolonged and repeated skin contact.

#### **Component Carcinogenicity**

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Crude oil	A2	Group 3	List 1	OSHA Carcinogen.	Listed.

**Mutagenicity:** Not available.

**Reproductive Effects:** Studies exist which report a link to crude oil and reproductive effects including menstrual disorders.

#### **Developmental Effects**

**Teratogenicity:** Not available.

**Embryotoxicity:** Repeated dermal application of crude oils to pregnant rats produced maternal toxicity and fetal developmental toxicity and fetal tumours.

**Toxicologically Synergistic Materials:** Not available.

### **Section 12: ECOLOGICAL INFORMATION**

**Ecotoxicity:** Not available.

**Persistence / Degradability:** Not available.

**Bioaccumulation / Accumulation:** Not available.**Mobility in Environment:** Not available.**Other Adverse Effects:** Not available.**Section 13: DISPOSAL CONSIDERATIONS**

**Disposal Instructions:** Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

**Section 14: TRANSPORT INFORMATION****U.S. Department of Transportation (DOT)****Proper Shipping Name:** Not regulated.**Class:** Not applicable.**UN Number:** Not applicable.**Packing Group:** Not applicable.**Label Code:** Not applicable.**Canada Transportation of Dangerous Goods (TDG)****Proper Shipping Name:** Not regulated.**Class:** Not applicable.**UN Number:** Not applicable.**Packing Group:** Not applicable.**Label Code:** Not applicable.**Section 15: REGULATORY INFORMATION****Chemical Inventories****US (TSCA)**

The components of this product are in compliance with the chemical notification requirements of TSCA.

**Canada (DSL)**

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

**Federal Regulations****Canada**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**WHMIS Classification:** Not a controlled product.**Hazard Symbols:** None.

**Produced Water****SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET**

Date of Preparation: August 30, 2013

**United States**

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**SARA Title III**

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112( r ) TQ (lbs.)
Hydrogen sulphide	500	100	100	313s	U135	10000

**State Regulations****Massachusetts**

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Hydrogen sulphide	7783-06-4	E
Crude oil	8002-05-9	Listed.

**Note:** E = Extraordinarily Hazardous Substance

**New Jersey**

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Hydrogen sulphide	7783-06-4	SHHS
Crude oil	8002-05-9	SHHS

**Note:** SHHS = Special Health Hazard Substance

**Pennsylvania**

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Water	7732-18-5	Not listed.
Hydrogen sulphide	7783-06-4	E
Crude oil	8002-05-9	Listed.

**Note:** E = Environmental Hazard

**California**

**California Prop 65:** WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Component	Type of Toxicity
Crude oil	cancer

**Section 16: OTHER INFORMATION****Disclaimer:**

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his own particular use.

**Date of Preparation of SDS:** August 30, 2013

**SDS Expiry Date (Canada):** August 29, 2016

**Version:** 1.0

**GHS SDS Prepared by:** **Deerfoot Consulting Inc.**  
**Phone: (403) 720-3700**

**SAFETY DATA SHEET****Product Trade Name: AQUAGEL GOLD SEAL®**

Revision Date: 01-Feb-2018

Revision Number: 41

**1. Identification****1.1. Product Identifier**

**Product Trade Name:** AQUAGEL GOLD SEAL®  
**Synonyms** None  
**Chemical Family:** Mineral  
**Internal ID Code** HM003470

**1.2 Recommended use and restrictions on use**

**Application:** Viscosifier  
**Uses advised against** No information available

**1.3 Manufacturer's Name and Contact Details****Manufacturer/Supplier**

Baroid Fluid Services  
Product Service Line of Halliburton Energy Services, Inc.  
P.O. Box 1675  
Houston, TX 77251  
Telephone: (281) 871-4000

Halliburton Energy Services, Inc.  
645 - 7th Ave SW Suite 1800  
Calgary, AB  
T2P 4G8  
Canada

**Prepared By** Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

**1.4. Emergency telephone number:**

**Emergency Telephone Number** 1-866-519-4752 or 1-760-476-3962  
Global Incident Response Access Code: 334305  
Contract Number: 14012

**2. Hazards Identification****2.1 Classification in accordance with paragraph (d) of §1910.1200**

Carcinogenicity	Category 1A - H350
Specific Target Organ Toxicity - (Repeated Exposure)	Category 1 - H372

**2.2. Label Elements****Hazard Pictograms**



**Signal Word:** Danger

**Hazard Statements**  
 H350 - May cause cancer by inhalation  
 H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

#### Precautionary Statements

**Prevention**  
 P201 - Obtain special instructions before use  
 P202 - Do not handle until all safety precautions have been read and understood  
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray  
 P264 - Wash face, hands and any exposed skin thoroughly after handling  
 P270 - Do not eat, drink or smoke when using this product  
 P280 - Wear protective gloves/protective clothing/eye protection/face protection

**Response**  
 P308 + P313 - IF exposed or concerned: Get medical advice/attention  
 P314 - Get medical attention/advice if you feel unwell

**Storage**  
 P405 - Store locked up

**Disposal**  
 P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

#### 2.3 Hazards not otherwise classified

This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface. Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz. A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer. In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

### 3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Crystalline silica, quartz	14808-60-7	1 - 5%	Carc. 1A (H350) STOT RE 1 (H372)

The exact percentage (concentration) of the composition has been withheld as proprietary.

### 4. First Aid Measures

#### 4.1. Description of first aid measures

**Inhalation** If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Ingestion** Under normal conditions, first aid procedures are not required.

#### 4.2 Most important symptoms/effects, acute and delayed

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

#### **4.3. Indication of any immediate medical attention and special treatment needed**

**Notes to Physician**

Treat symptomatically.

### **5. Fire-fighting measures**

#### **5.1. Extinguishing media**

##### **Suitable Extinguishing Media**

All standard fire fighting media

##### **Extinguishing media which must not be used for safety reasons**

None known.

#### **5.2 Specific hazards arising from the substance or mixture**

##### **Special exposure hazards in a fire**

None anticipated

#### **5.3 Special protective equipment and precautions for fire-fighters**

##### **Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

### **6. Accidental release measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing.

Ensure adequate ventilation.

See Section 8 for additional information

#### **6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

#### **6.3. Methods and material for containment and cleaning up**

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

### **7. Handling and storage**

#### **7.1. Precautions for safe handling**

##### **Handling Precautions**

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

##### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

#### **7.2. Conditions for safe storage, including any incompatibilities**

##### **Storage Information**

Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container. Store locked up. Product has a shelf life of 24 months.

### **8. Exposure Controls/Personal Protection**

**8.1 Occupational Exposure Limits**

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Crystalline silica, quartz	14808-60-7	TWA: 50 µg/m <sup>3</sup>	TWA: 0.025 mg/m <sup>3</sup>

Exposures to crystalline silica that result from bentonite or other sorptive clays are exempt from the PEL in §1910.1053. The PEL in §1910.1000 Table Z-3 (i.e., the formula that is approximately equivalent to 100 µg/m<sup>3</sup>) applies to occupational exposures to respirable crystalline silica from sorptive clays.

**8.2 Appropriate engineering controls**

**Engineering Controls** Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

**8.3 Individual protection measures, such as personal protective equipment**

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

**Hand Protection** Dust/mist respirator. (N95, P2/P3)

**Skin Protection** Normal work gloves.

**Eye Protection** Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.

**Other Precautions** Wear safety glasses or goggles to protect against exposure.

None known.

**9. Physical and Chemical Properties****9.1. Information on basic physical and chemical properties**

**Physical State:** Powder **Color** Tan

**Odor:** Mild earthy **Odor** No information available

**Threshold:**

Property	Values
Remarks/ - Method	
<b>pH:</b>	8-10
<b>Freezing Point / Range</b>	No data available
<b>Melting Point / Range</b>	No data available
<b>Boiling Point / Range</b>	No data available
<b>Flash Point</b>	No data available
<b>Flammability (solid, gas)</b>	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
<b>Evaporation rate</b>	No data available
<b>Vapor Pressure</b>	No data available
<b>Vapor Density</b>	No data available
<b>Specific Gravity</b>	2.6
<b>Water Solubility</b>	Insoluble in water
<b>Solubility in other solvents</b>	No data available
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Autoignition Temperature</b>	No data available
<b>Decomposition Temperature</b>	No data available
<b>Viscosity</b>	No data available

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

**9.2. Other information****VOC Content (%)**

No data available

**10. Stability and Reactivity****10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Hydrofluoric acid.

**10.6. Hazardous decomposition products**

Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

**11. Toxicological Information****11.1 Information on likely routes of exposure****Principle Route of Exposure** Eye or skin contact, inhalation.**11.2 Symptoms related to the physical, chemical and toxicological characteristics****Acute Toxicity****Inhalation**

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

**Eye Contact**

May cause mechanical irritation to eye.

**Skin Contact**

May cause mild skin irritation.

**Ingestion**

May cause abdominal pain, vomiting, nausea, and diarrhea.

**Chronic Effects/Carcinogenicity**

This product contains a suspected carcinogen. May cause damage to organs through prolonged or repeated exposure. This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface (Wendlandt et al., 2007; Hochella and Muryama, 2010; SMI, 2014). Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz (Geh et al., 2006; Creutzenberg et al., 2008). A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer (Waxweiler et al., 1988; ACGIH, 1991;

USEPA, 1996; IARC, 2005). In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

### 11.3 Toxicity data

#### Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Crystalline silica, quartz	14808-60-7	> 15000 mg/kg (human)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin

Substances	CAS Number	Serious eye damage/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the eye

Substances	CAS Number	Skin Sensitization
Crystalline silica, quartz	14808-60-7	No information available.

Substances	CAS Number	Respiratory Sensitization
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	Mutagenic Effects
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.

Substances	CAS Number	Carcinogenic Effects
Crystalline silica, quartz	14808-60-7	Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure.

Substances	CAS Number	Reproductive toxicity
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	STOT - single exposure
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Crystalline silica, quartz	14808-60-7	Not applicable

## 12. Ecological Information

### 12.1. Toxicity

#### Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Crystalline silica, quartz	14808-60-7	EC50 (72 h) =440 mg/L (Selenastrum capricornutum)(similar substance)	LL0 (96 h) =10000 mg/L (Danio rerio)(similar substance)	No information available	LL50 (24 h) >10000 mg/L (Daphnia magna)(similar substance)

### 12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Crystalline silica, quartz	14808-60-7	The methods for determining biodegradability are not applicable to inorganic substances.

### 12.3. Bioaccumulative potential

Does not bioaccumulate.

Substances	CAS Number	Log Pow
Crystalline silica, quartz	14808-60-7	No information available

**12.4. Mobility in soil**

Substances	CAS Number	Mobility
Crystalline silica, quartz	14808-60-7	No information available

**12.5 Other adverse effects**

No information available

**13. Disposal Considerations****13.1. Waste treatment methods****Disposal methods**

If practical, recover and reclaim, recycle, or reuse by the guidelines of an approved local reuse program. Should contaminated product become a waste, dispose of in a licensed industrial landfill according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

**Contaminated Packaging**

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

**14. Transport Information****US DOT**

UN Number Not restricted  
 UN proper shipping name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**Canadian TDG**

UN Number Not restricted  
 UN proper shipping name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**IMDG/IMO**

UN Number Not restricted  
 UN proper shipping name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**IATA/ICAO**

UN Number Not restricted  
 UN proper shipping name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable

**Special Precautions for User** None

## 15. Regulatory Information

### US Regulations

**US TSCA Inventory** All components listed on inventory or are exempt.

#### TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Crystalline silica, quartz	14808-60-7	Not applicable

#### EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Crystalline silica, quartz	14808-60-7	Not applicable

#### EPA SARA (311,312) Hazard Class

Chronic Health Hazard

#### EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Crystalline silica, quartz	14808-60-7	Not applicable	Not applicable

#### EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Crystalline silica, quartz	14808-60-7	Not applicable

#### EPA RCRA Hazardous Waste Classification

If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

#### California Proposition 65

Substances	CAS Number	California Proposition 65
Crystalline silica, quartz	14808-60-7	carcinogen

#### U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Crystalline silica, quartz	14808-60-7	Carcinogen Extraordinarily hazardous	1660	Present

**NFPA Ratings:** Health 0, Flammability 0, Reactivity 0

**HMIS Ratings:** Health 0\*, Flammability 0, Physical Hazard 0, PPE: E

### Canadian Regulations

**Canadian Domestic Substances** All components listed on inventory or are exempt.  
List (DSL)

## 16. Other information

#### Preparation Information

Prepared By

Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

---

<b>Revision Date:</b>	01-Feb-2018
<b>Reason for Revision</b>	Change to composition SDS sections updated: 2 3 8 11

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

bw – body weight  
CAS – Chemical Abstracts Service  
d - day  
EC50 – Effective Concentration 50%  
ErC50 – Effective Concentration growth rate 50%  
h - hour  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
NIOSH – National Institute for Occupational Safety and Health  
NTP – National Toxicology Program  
OEL – Occupational Exposure Limit  
PEL – Permissible Exposure Limit  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
UN – United Nations  
w/w - weight/weight

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

**Product Trade Name:** BARACARB® 5

**Revision Date:** 03-Jan-2017

**Revision Number:** 29

### 1. Identification

#### 1.1. Product Identifier

**Product Trade Name:** BARACARB® 5  
**Synonyms** None  
**Chemical Family:** Mineral  
**Internal ID Code** HM003487

#### 1.2 Recommended use and restrictions on use

**Application:** Bridging Agent  
**Uses advised against** No information available

#### 1.3 Manufacturer's Name and Contact Details

**Manufacturer/Supplier**  
Baroid Fluid Services  
Product Service Line of Halliburton  
P.O. Box 1675  
Houston, TX 77251

Halliburton Energy Services  
645 - 7th Ave SW Suite 1800  
Calgary, AB  
T2P 4G8  
Canada

**Prepared By** Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

#### 1.4. Emergency telephone number

**Emergency Telephone Number:** 1-866-519-4752 or 1-760-476-3962  
Global Incident Response Access Code: 334305  
Contract Number: 14012

### 2. Hazard(s) Identification

#### 2.1 Classification in accordance with paragraph (d) of §1910.1200

As adopted by the competent authority, this product does not require an SDS or hazard warning label.

Not classified

#### 2.2. Label Elements

**Hazard Pictograms**

**Signal Word:** Not Classified

**Hazard Statements** Not Hazardous

**Precautionary Statements**

<b>Prevention</b>	None
<b>Response</b>	None
<b>Storage</b>	None
<b>Disposal</b>	None

**2.3 Hazards not otherwise classified**

None known

**3. Composition/information on Ingredients**

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not classified

The exact percentage (concentration) of the composition has been withheld as proprietary.

**4. First-Aid Measures****4.1. Description of first aid measures**

<b>Inhalation</b>	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
<b>Eyes</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
<b>Skin</b>	Wash with soap and water. Get medical attention if irritation persists.
<b>Ingestion</b>	Under normal conditions, first aid procedures are not required.

**4.2 Most important symptoms/effects, acute and delayed**

No significant hazards expected.

**4.3. Indication of any immediate medical attention and special treatment needed**

Notes to Physician	Treat symptomatically.
--------------------	------------------------

**5. Fire-fighting measures****5.1. Extinguishing media****Suitable Extinguishing Media**

All standard fire fighting media

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2 Specific hazards arising from the substance or mixture****Special exposure hazards in a fire**

None anticipated

**5.3 Special protective equipment and precautions for fire-fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use appropriate protective equipment. Avoid creating and breathing dust.  
See Section 8 for additional information

## **6.2. Environmental precautions**

None known.

## **6.3. Methods and material for containment and cleaning up**

Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

# **7. Handling and storage**

## **7.1. Precautions for safe handling**

### **Handling Precautions**

Avoid creating or inhaling dust.

### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

## **7.2. Conditions for safe storage, including any incompatibilities**

### **Storage Information**

Store away from acids. Store in a cool, dry location. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container. Product has a shelf life of 60 months.

# **8. Exposure Controls/Personal Protection**

## **8.1 Occupational Exposure Limits**

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

## **8.2 Appropriate engineering controls**

### **Engineering Controls**

Use in a well ventilated area. Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

## **8.3 Individual protection measures, such as personal protective equipment**

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Dust/mist respirator. (N95, P2/P3)

### **Hand Protection**

Normal work gloves.

### **Skin Protection**

Normal work coveralls.

### **Eye Protection**

Wear safety glasses or goggles to protect against exposure.

### **Other Precautions**

None known.

# **9. Physical and Chemical Properties**

**9.1. Information on basic physical and chemical properties**

<b>Physical State:</b> Solid Powder	<b>Color</b>	White
<b>Odor:</b> Odorless	<b>Odor</b>	No information available
	<b>Threshold:</b>	

<u>Property</u>	<u>Values</u>
<u>Remarks/ - Method</u>	
<b>pH:</b>	8-9
<b>Freezing Point / Range</b>	No data available
<b>Melting Point / Range</b>	No data available
<b>Boiling Point / Range</b>	No data available
<b>Flash Point</b>	No data available
<b>Flammability (solid, gas)</b>	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
<b>Evaporation rate</b>	No data available
<b>Vapor Pressure</b>	No data available
<b>Vapor Density</b>	No data available
<b>Specific Gravity</b>	2.7
<b>Water Solubility</b>	Insoluble in water
<b>Solubility in other solvents</b>	No data available
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Autoignition Temperature</b>	No data available
<b>Decomposition Temperature</b>	No data available
<b>Viscosity</b>	No data available

<b>Explosive Properties</b>	No information available
<b>Oxidizing Properties</b>	No information available

**9.2. Other information**

<b>VOC Content (%)</b>	No data available
------------------------	-------------------

**10. Stability and Reactivity****10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong acids.

**10.6. Hazardous decomposition products**

Carbon monoxide and carbon dioxide.

**11. Toxicological Information****11.1 Information on likely routes of exposure**

<b>Principle Route of Exposure</b>	Eye or skin contact, inhalation.
------------------------------------	----------------------------------

**11.2 Symptoms related to the physical, chemical and toxicological characteristics****Acute Toxicity**

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mechanical irritation to eye.
Skin Contact	None known.
Ingestion	None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**11.3 Toxicity data****Toxicology data for the components**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No data available	No data available	No data available

**12. Ecological Information****12.1. Toxicity****Substance Ecotoxicity Data**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

**12.2. Persistence and degradability**

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

**12.3. Bioaccumulative potential**

Substances	CAS Number	Log Pow
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

**12.4. Mobility in soil**

Substances	CAS Number	Mobility
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

**12.5 Other adverse effects**

No information available

**13. Disposal Considerations****13.1. Waste treatment methods**

**Disposal methods** Bury in a licensed landfill according to federal, state, and local regulations.  
**Contaminated Packaging** Follow all applicable national or local regulations.

**14. Transport Information****US DOT**

**UN Number** Not restricted  
**UN proper shipping name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Canadian TDG**

**UN Number** Not restricted  
**UN proper shipping name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**IMDG/IMO**

**UN Number** Not restricted  
**UN proper shipping name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**IATA/ICAO**

**UN Number** Not restricted  
**UN proper shipping name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable

**Special Precautions for User** None

**15. Regulatory Information****US Regulations**

**US TSCA Inventory** All components listed on inventory or are exempt.

**TSCA Significant New Use Rules - S5A2**

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Contains no hazardous substances in concentrations	NA	Not applicable

above cut-off values according to the competent authority		
---	--	--

**EPA SARA Title III Extremely Hazardous Substances**

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

**EPA SARA (311,312) Hazard Class**

None

**EPA SARA (313) Chemicals**

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

**EPA CERCLA/Superfund Reportable Spill Quantity**

Substances	CAS Number	CERCLA RQ
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

**EPA RCRA Hazardous Waste Classification**

If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

**California Proposition 65** The California Proposition 65 regulations apply to this product.

**MA Right-to-Know Law** One or more components listed.

**NJ Right-to-Know Law** One or more components listed.

**PA Right-to-Know Law** One or more components listed.

**NFPA Ratings:** Health 0, Flammability 0, Reactivity 0

**HMIS Ratings:** Health 0, Flammability 0, Reactivity 0, PPE: B

**Canadian Regulations**

**Canadian Domestic Substances List (DSL)** All components listed on inventory or are exempt.

**16. Other information****Preparation Information**

**Prepared By** Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

**Revision Date:** 03-Jan-2017

**Reason for Revision** SDS sections updated:  
2  
11  
15

**Additional information**

---

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

bw – body weight  
CAS – Chemical Abstracts Service  
d - day  
EC50 – Effective Concentration 50%  
ErC50 – Effective Concentration growth rate 50%  
h - hour  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
NIOSH – National Institute for Occupational Safety and Health  
NTP – National Toxicology Program  
OEL – Occupational Exposure Limit  
PEL – Permissible Exposure Limit  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
UN – United Nations  
w/w - weight/weight

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## SAFETY DATA SHEET

**Product Trade Name:** BaraLube® NAF Ultra

**Revision Date:** 09-Jan-2020

**Revision Number:** 1

### 1. Identification

#### 1.1. Product Identifier

**Product Trade Name:** BaraLube® NAF Ultra  
**Synonyms** None  
**Chemical Family:** Polyol mixture  
**Internal ID Code** HM009285

#### 1.2 Recommended use and restrictions on use

**Application:** Lubricant  
**Uses advised against** No information available

#### 1.3 Manufacturer's Name and Contact Details

**Manufacturer/Supplier**  
Baroid Fluid Services  
Product Service Line of Halliburton Energy Services, Inc.  
P.O. Box 1675  
Houston, TX 77251  
Telephone: (281) 871-4000

Halliburton Group Canada  
645 - 7th Ave SW Suite 1800  
Calgary, AB, T2P 4G8, Canada  
Telephone: 1-403-231-9300

**Prepared By** Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

#### 1.4. Emergency telephone number:

**Emergency Telephone Number** 1-866-519-4752 or 1-760-476-3962 (accessible 24 hours a day / 7 days a week)  
Global Incident Response Access Code: 334305  
Contract Number: 14012

### 2. Hazards Identification

#### 2.1 Classification in accordance with paragraph (d) of §1910.1200

As adopted by the competent authority, this product does not require an SDS or hazard warning label.

Not classified

#### 2.2. Label Elements

**Hazard Pictograms**

**Signal Word:** Not Classified

**Hazard Statements** Not Hazardous

**Precautionary Statements**

<b>Prevention</b>	None
<b>Response</b>	None
<b>Storage</b>	None
<b>Disposal</b>	None

**2.3 Hazards not otherwise classified**

None known

**3. Composition/information on Ingredients**

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not classified

The exact percentage (concentration) of the composition has been withheld as proprietary.

**4. First Aid Measures**

**4.1. Description of first aid measures**

<b>Inhalation</b>	Move person to fresh air.
<b>Eyes</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
<b>Skin</b>	Wash with soap and water.
<b>Ingestion</b>	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**4.2 Most important symptoms/effects, acute and delayed**

No significant hazards expected.

**4.3. Indication of any immediate medical attention and special treatment needed**

<b>Notes to Physician</b>	Treat symptomatically.
---------------------------	------------------------

**5. Fire-fighting measures**

**5.1. Extinguishing media**

**Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2 Specific hazards arising from the substance or mixture**

**Special exposure hazards in a fire**

Decomposition in fire may produce harmful gases.

**5.3 Special protective equipment and precautions for fire-fighters**

**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

See Section 8 for additional information

### 6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

### 6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. Handling and storage

### 7.1. Precautions for safe handling

#### Handling Precautions

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

#### Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Storage Information

Store away from oxidizers. Keep container closed when not in use. Product has a shelf life of 36 months.

## 8. Exposure Controls/Personal Protection

### 8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

### 8.2 Appropriate engineering controls

**Engineering Controls** Use in a well ventilated area.

### 8.3 Individual protection measures, such as personal protective equipment

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** Not normally necessary.

**Hand Protection** Impervious rubber gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

<b>Physical State:</b> Liquid	<b>Color</b> Light yellow
<b>Odor:</b> Odorless	<b>Odor</b> No information available
	<b>Threshold:</b>

PropertyRemarks/ - MethodValues**pH:**

6-9

**Freezing Point / Range**

-25 °C / -13 °F

**Melting Point / Range**

No data available

**Pour Point / Range**

No data available

**Boiling Point / Range**

No data available

**Flash Point**

204 °C / 400 °F (PMCC)

**Flammability (solid, gas)**

No data available

**Upper flammability limit**

No data available

**Lower flammability limit**

No data available

**Evaporation rate**

No data available

**Vapor Pressure**

No data available

**Vapor Density**

No data available

**Specific Gravity**

1.23

**Water Solubility**

Soluble in water

**Solubility in other solvents**

No data available

**Partition coefficient: n-octanol/water**

1.3

**Autoignition Temperature**

380 °C / 715 °F

**Decomposition Temperature**

No data available

**Viscosity**

17,000 cps @ 20 C

**Explosive Properties**

No information available

**Oxidizing Properties**

No information available

**9.2. Other information****VOC Content (%)**

No data available

**Liquid Density**

10.2 lbs/gal @ 20 C

**10. Stability and Reactivity****10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical stability**

Stable

**10.3. Possibility of hazardous reactions**

Will Not Occur

**10.4. Conditions to avoid**

None anticipated

**10.5. Incompatible materials**

Strong oxidizers.

**10.6. Hazardous decomposition products**

Acrolein. Carbon monoxide and carbon dioxide.

**11. Toxicological Information****11.1 Information on likely routes of exposure****Principle Route of Exposure** Eye or skin contact, inhalation.

**11.2 Symptoms related to the physical, chemical and toxicological characteristics****Acute Toxicity**

Inhalation	None known.
Eye Contact	None known.
Skin Contact	None known.
Ingestion	None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

**11.3 Toxicity data****Toxicology data for the components**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No data available	No data available	No data available

**12. Ecological Information****12.1. Toxicity****Substance Ecotoxicity Data**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

**12.2. Persistence and degradability**

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

**12.3. Bioaccumulative potential**

Substances	CAS Number	Bioaccumulation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

**12.4. Mobility in soil**

Substances	CAS Number	Mobility
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

**12.5 Other adverse effects**

No information available

**13. Disposal Considerations****13.1. Waste treatment methods**

**Disposal methods** Disposal should be made in accordance with federal, state, and local regulations.  
**Contaminated Packaging** Follow all applicable national or local regulations.

**14. Transport Information****US DOT**

UN Number Not restricted  
UN proper shipping name: Not restricted  
Transport Hazard Class(es): Not applicable  
Packing Group: Not applicable  
Environmental Hazards: Not applicable

**Canadian TDG**

UN Number Not restricted  
UN proper shipping name: Not restricted  
Transport Hazard Class(es): Not applicable  
Packing Group: Not applicable  
Environmental Hazards: Not applicable

**IMDG/IMO**

UN Number Not restricted  
UN proper shipping name: Not restricted  
Transport Hazard Class(es): Not applicable  
Packing Group: Not applicable  
Environmental Hazards: Not applicable

**IATA/ICAO**

UN Number Not restricted  
UN proper shipping name: Not restricted  
Transport Hazard Class(es): Not applicable  
Packing Group: Not applicable  
Environmental Hazards: Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable

**Special Precautions for User** None

**15. Regulatory Information****US Regulations**

**US TSCA Inventory** All components listed on inventory or are exempt.

**TSCA Significant New Use Rules - S5A2**

Substances	CAS Number	TSCA Significant New Use Rules - S5A2	TSCA Section 5(E) Consent Orders
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

**EPA SARA Title III Extremely Hazardous Substances**

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

**EPA SARA (311,312) Hazard Class**

None

**EPA SARA (313) Chemicals**

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

**EPA CERCLA/Superfund Reportable Spill Quantity**

Substances	CAS Number	CERCLA RQ
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

**EPA RCRA Hazardous Waste Classification**

If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

**California Proposition 65**

Substances	CAS Number	California Proposition 65
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

**U.S. State Right-to-Know Regulations**

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable	Not applicable

NFPA Ratings: Health 1, Flammability 0, Reactivity 0

HMIS Ratings: Health 1, Flammability 0, Reactivity 0

**Canadian Regulations**

**Canadian Domestic Substances** All components listed on inventory or are exempt.  
List (DSL)

**16. Other information****Preparation Information**

Prepared By

Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

Revision Date: 09-Jan-2020

Reason for Revision Initial Release

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

bw – body weight

CAS – Chemical Abstracts Service

d - day

EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%

h - hour

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

NIOSH – National Institute for Occupational Safety and Health

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PEL – Permissible Exposure Limit

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

UN – United Nations

w/w - weight/weight

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

NZ CCID

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

**SAFETY DATA SHEET****Product Trade Name:** BARAVIS (HEC) SA**Revision Date:** 23-May-2019**Revision Number:** 2**1. Identification****1.1. Product Identifier**

**Product Trade Name:** BARAVIS (HEC) SA  
**Synonyms** None  
**Chemical Family:** Carbohydrate  
**Internal ID Code** HM008833

**1.2 Recommended use and restrictions on use**

**Application:** Viscosifier  
**Uses advised against** No information available

**1.3 Manufacturer's Name and Contact Details****Manufacturer/Supplier**

Baroid Fluid Services  
Product Service Line of Halliburton Energy Services, Inc.  
P.O. Box 1675  
Houston, TX 77251  
Telephone: (281) 871-4000

Halliburton Group Canada  
645 - 7th Ave SW Suite 1800  
Calgary, AB, T2P 4G8, Canada  
Telephone: 1-403-231-9300

**Prepared By** Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

**1.4. Emergency telephone number:**

**Emergency Telephone Number** 1-866-519-4752 or 1-760-476-3962 (accessible 24 hours a day / 7 days a week)  
Global Incident Response Access Code: 334305  
Contract Number: 14012

**2. Hazards Identification****2.1 Classification in accordance with paragraph (d) of §1910.1200**

Combustible dust

Combustible dust

**2.2. Label Elements****Hazard Pictograms****Signal Word:** Warning**Hazard Statements**

May form combustible dust concentrations in air.

**Precautionary Statements**

<b>Prevention</b>	None
<b>Response</b>	None
<b>Storage</b>	None
<b>Disposal</b>	None

**2.3 Hazards not otherwise classified**

None known

**3. Composition/information on Ingredients**

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Cellulose derivative	Proprietary	60 - 100%	Combustible Dust

The specific chemical identity of the composition has been withheld as proprietary. The exact percentage (concentration) of the composition has been withheld as proprietary.

**4. First Aid Measures****4.1. Description of first aid measures**

<b>Inhalation</b>	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
<b>Eyes</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
<b>Skin</b>	Wash with soap and water. Get medical attention if irritation persists.
<b>Ingestion</b>	Rinse mouth with water many times. Get medical attention, if symptoms occur

**4.2 Most important symptoms/effects, acute and delayed**

No significant hazards expected.

**4.3. Indication of any immediate medical attention and special treatment needed**

Notes to Physician	Treat symptomatically.
--------------------	------------------------

**5. Fire-fighting measures****5.1. Extinguishing media****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

**Extinguishing media which must not be used for safety reasons**

Avoid creating dust clouds with extinguishers.

**5.2 Specific hazards arising from the substance or mixture****Special exposure hazards in a fire**

Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

**5.3 Special protective equipment and precautions for fire-fighters****Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**6. Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Slippery when wet. See Section 8 for additional information.

**6.2. Environmental precautions**

None known.

**6.3. Methods and material for containment and cleaning up**

Scoop up and remove.

**7. Handling and storage****7.1. Precautions for safe handling****Handling Precautions**

Use appropriate protective equipment. Ensure adequate ventilation. Avoid dust accumulations. Avoid contact with eyes, skin, or clothing. Ground and bond containers when transferring from one container to another.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Storage Information**

Store away from oxidizers. Store in a dry location. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Avoid contact with heat, sparks, open flame, and static discharge.

**8. Exposure Controls/Personal Protection****8.1 Occupational Exposure Limits**

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Cellulose derivative	Proprietary	Not applicable	Not applicable

**8.2 Appropriate engineering controls****Engineering Controls**

A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.

**8.3 Individual protection measures, such as personal protective equipment****Personal Protective Equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection**

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Dust/mist respirator. (N95, P2/P3)

**Hand Protection**

Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.

**Skin Protection**

Wear protective clothing appropriate for the work environment.

**Eye Protection**

Wear safety glasses or goggles to protect against exposure.

**Other Precautions**

None known.

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

<b>Physical State:</b>	Powder	<b>Color</b>	White to off white
<b>Odor:</b>	Mild	<b>Odor</b>	No information available
		<b>Threshold:</b>	

<u>Property</u> <u>Remarks/ - Method</u>	<u>Values</u>
<b>pH:</b>	6-8.5 (1%)
<b>Freezing Point / Range</b>	290 °C / 554 °F
<b>Melting Point / Range</b>	No data available
<b>Pour Point / Range</b>	No data available
<b>Boiling Point / Range</b>	No data available
<b>Flash Point</b>	221 °C / 430 °F
<b>Flammability (solid, gas)</b>	No data available
<b>Upper flammability limit</b>	No data available
<b>Lower flammability limit</b>	No data available
<b>Evaporation rate</b>	No data available
<b>Vapor Pressure</b>	No data available
<b>Vapor Density</b>	No data available
<b>Specific Gravity</b>	1.38 - 1.4
<b>Water Solubility</b>	Soluble in water
<b>Solubility in other solvents</b>	No data available
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Autoignition Temperature</b>	400 °C / 752 °F
<b>Decomposition Temperature</b>	No data available
<b>Viscosity</b>	No data available
<b>Explosive Properties</b>	No information available
<b>Oxidizing Properties</b>	No information available

### 9.2. Other information

<b>Molecular Weight</b>	>1,000,000 g/mol
<b>VOC Content (%)</b>	No data available
<b>Bulk Density</b>	37 lbs/ft <sup>3</sup>

## 10. Stability and Reactivity

### 10.1. Reactivity

May form combustible dust concentrations in air.

### 10.2. Chemical stability

Stable

### 10.3. Possibility of hazardous reactions

Will Not Occur

### 10.4. Conditions to avoid

None anticipated

### 10.5. Incompatible materials

Strong oxidizers.

### 10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

### 11.1 Information on likely routes of exposure

**Principle Route of Exposure** Eye or skin contact, inhalation.

### 11.2 Symptoms related to the physical, chemical and toxicological characteristics

#### Acute Toxicity

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mechanical irritation to eye.
Skin Contact	None known.
Ingestion	May cause abdominal pain, vomiting, nausea, and diarrhea.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

### 11.3 Toxicity data

#### Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Cellulose derivative	Proprietary	> 2000 mg/kg > 23,070 mg/kg (Rat)	> 5000 mg/kg (Rabbit) (similar substance)	> 0.285 mg/L (4h) (dust)

Substances	CAS Number	Skin corrosion/irritation
Cellulose derivative		Not irritating to skin in rabbits.

Substances	CAS Number	Serious eye damage/irritation
Cellulose derivative		Non-irritating to rabbit's eye

Substances	CAS Number	Skin Sensitization
Cellulose derivative		Patch test on human volunteers did not demonstrate sensitization properties

Substances	CAS Number	Respiratory Sensitization
Cellulose derivative		No information available

Substances	CAS Number	Mutagenic Effects
Cellulose derivative		In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects. (similar substances)

Substances	CAS Number	Carcinogenic Effects
Cellulose derivative		No data of sufficient quality are available.

Substances	CAS Number	Reproductive toxicity
Cellulose derivative		No data of sufficient quality are available.

Substances	CAS Number	STOT - single exposure
Cellulose derivative		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Cellulose derivative		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Cellulose derivative		Not applicable

## 12. Ecological Information

### 12.1. Toxicity

#### Ecotoxicity effects

Product is not classified as hazardous to the environment.

**Substance Ecotoxicity Data**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Cellulose derivative	Proprietary	No information available	No information available	No information available	TLM96: > 1,000,000 ppm (Mysidopsis bahia)

**12.2. Persistence and degradability**

Substances	CAS Number	Persistence and Degradability
Cellulose derivative	Proprietary	No information available

**12.3. Bioaccumulative potential**

Substances	CAS Number	Bioaccumulation
Cellulose derivative	Proprietary	No information available

**12.4. Mobility in soil**

Substances	CAS Number	Mobility
Cellulose derivative	Proprietary	No information available

**12.5 Other adverse effects**

No information available

**13. Disposal Considerations****13.1. Waste treatment methods**

**Disposal methods** Follow all applicable community, national or regional regulations regarding waste management methods.

**Contaminated Packaging** Follow all applicable national or local regulations.

**14. Transport Information****US DOT**

UN Number Not restricted  
 UN proper shipping name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**Canadian TDG**

UN Number Not restricted  
 UN proper shipping name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**IMDG/IMO**

UN Number Not restricted  
 UN proper shipping name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**IATA/ICAO**

UN Number Not restricted  
 UN proper shipping name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable

**Special Precautions for User** None

## 15. Regulatory Information

### US Regulations

**US TSCA Inventory** All components listed on inventory or are exempt.

#### **TSCA Significant New Use Rules - S5A2**

Substances	CAS Number	TSCA Significant New Use Rules - S5A2	TSCA Section 5(E) Consent Orders
Cellulose derivative	Proprietary	Not applicable	Not applicable

#### **EPA SARA Title III Extremely Hazardous Substances**

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Cellulose derivative	Proprietary	Not applicable

#### **EPA SARA (311.312) Hazard Class**

Combustible dust

#### **EPA SARA (313) Chemicals**

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Cellulose derivative	Proprietary	Not applicable	Not applicable

#### **EPA CERCLA/Superfund Reportable Spill Quantity**

Substances	CAS Number	CERCLA RQ
Cellulose derivative	Proprietary	Not applicable

#### **EPA RCRA Hazardous Waste Classification**

If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

#### **California Proposition 65**

Substances	CAS Number	California Proposition 65
Cellulose derivative	Proprietary	Not applicable

#### **U.S. State Right-to-Know Regulations**

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Cellulose derivative	Proprietary	Not applicable	Not applicable	Not applicable

**NFPA Ratings:** Health 1, Flammability 1, Reactivity 0

**HMIS Ratings:** Health 1, Flammability 1, Physical Hazard 0, PPE: E

### Canadian Regulations

**Canadian Domestic Substances List (DSL)** All components listed on inventory or are exempt.

## 16. Other information

**Preparation Information****Prepared By**

Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

**Revision Date:**

23-May-2019

**Reason for Revision**

SDS sections updated:  
2

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

bw – body weight

CAS – Chemical Abstracts Service

d - day

EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%

h - hour

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

mg/m<sup>3</sup> - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

NIOSH – National Institute for Occupational Safety and Health

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PEL – Permissible Exposure Limit

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

UN – United Nations

w/w - weight/weight

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

**CHEMIPHASE LTD**  
**SAFETY DATA SHEET**



## **EMULSION BREAKER 210**

### **1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY UNDERTAKING**

PRODUCT NAME: **EMULSION BREAKER 210**

PRODUCT Description: Concentrated Oil Based Demulsifier **-NEW FORMULATION MARCH 2005**

APPLICATION: **BIO DIESEL PRODUCTION**

SUPPLIER: Chemiphase Ltd  
PO Box 168  
Ormskirk  
L40 6ZX  
Tel: 00 44 1744 886622  
Fax: 00 44 1744 886633

EMERGENCY TELEPHONE (24 HR) 00 44 (0) 1744 886622

### **2. COMPOSITION INFORMATION ON INGREDIENTS**

NAME	EC No	CAS No	CONTENT	CLASSIFICATION
2-BUTOXYETHANOL	203-905-0	111-76-2	8-15%	XnR20/21/22 Xi,R36/38
XYLENE	215-535-7	1330-20-7	15-22%	R10 Xn, R10/R20/21 Xi, R38 & S16

The Full Text for all R- Phrases are displayed in Section 16

### **3. HAZARDS IDENTIFICATION**

Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes and skin.

CLASSIFICATION Xn; R20/21/22. Xi;R36/38

### **4. FIRST AID MEASURES**

#### **GENERAL INFORMATION**

Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

#### **INHALATION**

Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Keep the affected person warm and at rest. Get prompt medical attention.

#### **INGESTION**

NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Remove victim immediately from source of exposure. Rinse mouth thoroughly. Promptly get affected person to drink large volumes of water to dilute the swallowed chemical. DO NOT induce vomiting. Get medical attention immediately.

#### **SKIN CONTACT**

Remove affected person from source of contamination. Promptly wash contaminated skin with soap or mild detergent and water. Promptly remove clothing if soaked through and wash as above. Get medical attention immediately.

#### **EYE CONTACT**

Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eyelids. Continue to rinse for at least 15 minutes and get medical attention.

### **5. FIRE FIGHTING MEASURES**

#### **EXTINGUISHING MEDIA**

Use: Powder, Carbon dioxide (CO<sub>2</sub>). Water spray. Foam

#### **SPECIAL FIRE FIGHTING PROCEDURES**

Avoid water in straight hose stream; will scatter and spread fire. Use water to keep fire exposed containers cool and disperse vapours. Keep run-off water out of sewers and water sources. Dike for water control.

#### **SPECIFIC HAZARDS**

By heating and fire, irritating vapours/gases may be formed.

#### **PROTECTIVE MEASURES IN FIRE**

Wear personal protective equipment. Wear self-contained breathing apparatus.

## 6. ACCIDENTAL RELEASE MEASURES

### PERSONAL PRECAUTIONS

Wear protective clothing as described in Section 8 of this safety data sheet. Avoid contact with skin and eyes. Provide adequate ventilation.

### ENVIRONMENTAL PRECAUTIONS

Do not discharge into drains, watercourses or onto the ground.

### SPILL CLEAN UP METHODS

Stop leak if possible without risk. Absorb in vermiculite, dry sand or earth and place into containers. Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Do not contaminate water sources or sewer.

## 7. HANDLING AND STORAGE

### Usage precautions

Avoid spilling, skin and eye contact. Ventilate well, avoid breathing vapours. Use approved respirator if air contamination is above accepted level.

### STORAGE PRECAUTIONS

Store in tightly closed original container in a cool dry well-ventilated place. Use container made of : Stainless steel. Suitable plastic material. Do NOT use container made of: Carbon steel.

## 8. EXPOSURE CONTROL/PERSONAL PROTECTION

Name	Std	LT - ppm	LT - mg/m <sup>3</sup>	ST - ppm	ST - mg/m <sup>3</sup>
XYLENE	OES	50 ppm (Sk)	220 mg/m <sup>3</sup> (Sk)	100 ppm(Sk)	441 mg/m <sup>3</sup> (Sk)
2-BUTOXYETHANOL	OES	25 PPM(Sk)		50 ppm(Sk)	

### INGREDIENT COMMENTS

OES = Occupational Exposure Standard. 2 – Butoxyethanol (EGMBE) has a Biological Monitoring Guidance Value. See UK HSE EH40 Table 3

### PROTECTIVE EQUIPMENT

Goggles and Gloves

### ENGINEERING MEASURES

Provide adequate general and local exhaust ventilation

### RESPIRATORY EQUIPMENT

No specific recommendation made, but respiratory protection may still be required under exceptional circumstances when excessive air contamination exists. Wear respiratory protection with combination filter (dust and gas filter).

### HAND PROTECTION

Use protective gloves. Rubber, neoprene or PVC. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

### EYE PROTECTION

Wear approved safety goggles.

### OTHER PROTECTION

Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact.

### HYGIENE MEASURES

DO NOT SMOKE IN WORK AREA! Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly with soap and water if skin becomes contaminated. Promptly remove any clothing that becomes contaminated. When using do not eat, drink or smoke.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Liquid		
COLOUR	Slightly hazy		
ODOUR:	Slight Aromatic	Boiling Point/ range (°C)	137-143
MELTING POINT (°C)	Pour Point , -20	RELATIVE DENSITY	■ 0.990 @ 20°C
Ph, VALUE, DILUTED SOLUTION	6.5-8.5, 5% in water	VISCOSITY	< 100 mPas @ 20°C
FLASH POINT (°C)	25	AUTOFlammability (°C)	480

## 10. STABILITY AND REACTIVITY

### STABILITY

Stable under normal temperature conditions.

### CONDITIONS TO AVOID

Avoid heat, flames and other sources of ignition

### MATERIAL TO AVOID

Strong oxidising substances. Strong acids

### HAZARDOUS DECOMPOSITION PRODUCTS

During fire, toxic gases (CO, CO<sub>2</sub>) are formed.

## 11. TOXICOLOGICAL INFORMATION

TOXIC DOSE 1 – LD<sub>50</sub> >4000 mg/kg (oral rat)

### INHALATION

Harmful by inhalation. In high concentrations, vapours are anaesthetic and may cause headache, fatigue, dizziness and central nervous system effects. Upper respiratory irritation. Vapours may cause headache, dizziness and nausea.

### INGESTION

Harmful if swallowed. Gastrointestinal symptoms, including upset stomach. May cause nausea, headache, dizziness and intoxication.

### SKIN CONTACT

Harmful in contact with skin. Irritating to skin.

### EYE CONTACT

Irritating to eyes. Spray and vapour in the eyes may cause irritation and smarting.

### Other Health Effects

No sensitising effects known.

## 12. ECOLOGICAL INFORMATION

### ECOTOXICITY

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

### MOBILITY

The product is insoluble in water

### BIOACCUMULATION

No data available

### DEGRADABILITY

The product is expected to be biodegradable

### WATER HAZARD CLASSIFICATION

WGK 1

## 13. DISPOSAL CONSIDERATIONS

### GENERAL INFORMATION

Empty containers should be taken for local recycling, recovery or waste disposal

### DISPOSAL METHODS

Recover and reclaim or recycle, if practical. Do not allow runoff to sewer, waterway or ground. Dispose of waste and residues in accordance with local authority requirements.

### WASTE CLASS

For this product, in accordance with the European Waste Catalogue (EWC), a catalogue number cannot be given because the customer has to lay down the purpose first. The catalogue number has to be given according to the local waste removal processes.

## 14. TRANSPORT INFORMATION

### GENERAL

ADR/RID

UN no: 1307

ADR Class: 3

Packing Group: III

Classification code: F1

Shipping name n/a

Labelling: 3  
IMDG/IMO

Hazard ID no: 30  
UN no: 1307 Class: 3

Packing Group: III

EMS:F-E, S-D

Marine Pollutant: NO

Labelling: 3

IATA/ICAO

UN no: 1307 Class: 3

Packing Group: III

Packing Instructions; 309(p&CA):310(CAO)

Marine Pollutant: NO

Labelling: 3

## 15. REGULATORY INFORMATION

### LABELLING



Harmful

### CONTAINS

2-BUTOXYETHANOL, Xylene

### RISK PHRASES

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed

R10 Flammable  
R36/38 Irritating to eyes and skin

### SAFETY PHRASES

S36/37 Wear suitable protective clothing and gloves

S16 Keep away from sources of ignition—NO SMOKING  
S60 This material and its container must be disposed of as hazardous waste

S23 Do not breathe vapour/spray

S26 In case of contact with eyes, rinse immediately with plenty of water and see medical advice

S51 Use only in well-ventilated areas

S24/25 Avoid contact with skin and eyes

### UK REGULATORY REFERENCES

Approved Supply List

### STATUTORY INSTRUMENTS

Chemicals (Hazard Information and Packaging) Regulations

### APPROVED CODE OF PRACTICE

Classification and Labelling of Substances and Preparations Dangerous for Supply. Safety Data Sheets for Substances and Preparations.

### GUIDANCE NOTES

Occupational Exposure Limits EH40. Approved guide to the classification and labelling of substances and preparations dangerous for supply.

## 16. OTHER INFORMATION

### REVISION COMMENTS

General revision

### ISSUED BY

CES

### REVISION DATE

MARCH 2008

REVISED SDS GENERATED MARCH 2005

### RISK PHRASES IN FULL

R10	Flammable
R20/21	Harmful by inhalation and in contact with skin
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed
R36/38	Irritating to eyes and skin
R38	Irritating to skin

### DISCLAIMER

The information provided in this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text.

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

#### Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : EC1317A CORROSION INHIBITOR

Other means of identification : Not applicable.

Recommended use : CORROSION INHIBITOR

Restrictions on use : Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.

Company : Nalco Champion Company  
7705 Highway 90-A  
Sugar Land, Texas 77478  
USA  
TEL: (281) 263-7000

Emergency telephone number : (800) 424-9300 (24 Hours) CHEMTREC

Issuing date : 03/06/2015

#### Section: 2. HAZARDS IDENTIFICATION

##### GHS Classification

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 3

Acute toxicity (Inhalation) : Category 3

Acute toxicity (Dermal) : Category 3

Skin corrosion : Category 1B

Serious eye damage : Category 1

Skin sensitization : Category 1

Specific target organ toxicity - single exposure : Category 1 (Eyes)

Specific target organ toxicity - single exposure : Category 2

Specific target organ toxicity - single exposure : Category 3 (Central Nervous System)

##### GHS Label element

Hazard pictograms :



Signal Word : Danger

Hazard Statements : Flammable liquid and vapour.  
Toxic if swallowed, in contact with skin or if inhaled  
Causes severe skin burns and eye damage.  
May cause an allergic skin reaction.  
May cause drowsiness or dizziness.  
Causes damage to organs (Eyes).  
May cause damage to organs.

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

**Precautionary Statements** : **Prevention:**  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ ventilating/ lighting/ equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**  
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed: Call a POISON CENTER or doctor/ physician. Immediately call a POISON CENTER or doctor/ physician. If skin irritation or rash occurs: Get medical advice/ attention. Wash contaminated clothing before reuse. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

**Storage:**  
Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

**Disposal:**  
Dispose of contents/ container to an approved waste disposal plant.

**Other hazards** : None known.

### Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Methanol	67-56-1	30 - 60
Tall Oil, DETA Imidazoline Acetates	68140-11-4	5 - 10
Benzyl-Dimethyl-Dodecyl-Ammonium Chloride	139-07-1	1 - 5
Thioglycolic Acid	68-11-1	1 - 5
Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride	139-08-2	0.1 - 1

### Section: 4. FIRST AID MEASURES

**In case of eye contact** : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

**In case of skin contact** : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**If swallowed** : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

	immediately.
If inhaled	: Remove to fresh air. Treat symptomatically. Get medical attention immediately.
Protection of first-aiders	: In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
Notes to physician	: Treat symptomatically.
Most important symptoms and effects, both acute and delayed	: See Section 11 for more detailed information on health effects and symptoms.

#### Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: None known.
Specific hazards during firefighting	: Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition.
Hazardous combustion products	: Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides
Special protective equipment for firefighters	: Use personal protective equipment.
Specific extinguishing methods	: Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

#### Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	: Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	: Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth,

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Flush away traces with water.

#### Section: 7. HANDLING AND STORAGE

- Advice on safe handling : Open drum carefully as content may be under pressure. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
- Conditions for safe storage : Keep away from heat and sources of ignition. Keep in a cool, well-ventilated place. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers. Connections must be grounded to avoid electrical charges. Avoid direct sunlight. At temperatures greater than 30°C a component of this product may degrade leading to the production of hydrogen sulfide (H<sub>2</sub>S).
- Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Stainless Steel 304, Stainless Steel 316L, Nitrile, EPDM, Perfluoroelastomer, PTFE, TFE, FEP (encapsulated), Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.
- Unsuitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Neoprene, Carbon Steel C1018, Fluoroelastomer

#### Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

##### Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m <sup>3</sup>	NIOSH REL
		STEL	250 ppm 325 mg/m <sup>3</sup>	NIOSH REL
		TWA	200 ppm 260 mg/m <sup>3</sup>	OSHA Z1
Thioglycolic Acid	68-11-1	TWA	1 ppm	ACGIH
		TWA	1 ppm 4 mg/m <sup>3</sup>	NIOSH REL

- Engineering measures : Effective exhaust ventilation system Maintain air concentrations below occupational exposure standards.

##### Personal protective equipment

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

Eye protection	: Safety goggles Face-shield
Hand protection	: Wear the following personal protective equipment: Standard glove type. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	: Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Respiratory protection	: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

### Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Liquid
Colour	: clear
Odour	: Alcoholic, Pungent
Flash point	: 30 °C Method: ASTM D 93, Pensky-Martens closed cup
pH	: 3.4, 100 %
Odour Threshold	: no data available
Melting point/freezing point	: POUR POINT: -46 °C
Initial boiling point and boiling range	: no data available
Evaporation rate	: no data available
Flammability (solid, gas)	: no data available
Upper explosion limit	: no data available
Lower explosion limit	: no data available
Vapour pressure	: 12.7 kPa (38 °C)
Relative vapour density	: no data available
Relative density	: 0.95 (15.6 °C)
Density	: 0.95 g/cm <sup>3</sup> 7.9 lb/gal
Water solubility	: completely soluble
Solubility in other solvents	: no data available
Partition coefficient: n-octanol/water	: no data available
Auto-ignition temperature	: no data available

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

Thermal decomposition temperature	: no data available
Viscosity, dynamic	: no data available
Viscosity, kinematic	: 2 mm <sup>2</sup> /s (38 °C) Method: ASTM D 445
VOC	: no data available

#### Section: 10. STABILITY AND REACTIVITY

Chemical stability	: At temperatures greater than 30°C a component of this product may degrade leading to the production of hydrogen sulfide (H <sub>2</sub> S).
Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.
Hazardous decomposition products	: Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NO <sub>x</sub> ) Sulphur oxides May evolve toxic fumes. Hydrogen sulfide (H <sub>2</sub> S)

#### Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	: Inhalation, Eye contact, Skin contact
--	---

##### Potential Health Effects

Eyes	: Causes serious eye damage.
Skin	: Toxic in contact with skin. Causes severe skin burns. May cause allergic skin reaction.
Ingestion	: May cause blindness if swallowed. Toxic if swallowed. Causes digestive tract burns.
Inhalation	: Toxic if inhaled. May cause nose, throat, and lung irritation. Inhalation may cause central nervous system effects.
Chronic Exposure	: May cause damage to organs.

##### Experience with human exposure

Eye contact	: Redness, Pain, Corrosion
Skin contact	: Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	: Corrosion, Abdominal pain
Inhalation	: Respiratory irritation, Cough, Dizziness, Drowsiness

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

#### Toxicity

##### Product

Acute oral toxicity	: Acute toxicity estimate : 262.63 mg/kg
Acute inhalation toxicity	: Acute toxicity estimate : 3.08 mg/l Exposure time: 4 h
Acute dermal toxicity	: Acute toxicity estimate : 800.53 mg/kg
Skin corrosion/irritation	: no data available
Serious eye damage/eye irritation	: no data available
Respiratory or skin sensitization	: no data available
Carcinogenicity	: no data available
Reproductive effects	: no data available
Germ cell mutagenicity	: no data available
Teratogenicity	: no data available
STOT - single exposure	: no data available
STOT - repeated exposure	: no data available
Aspiration toxicity	: no data available

#### Section: 12. ECOLOGICAL INFORMATION

##### Ecotoxicity

Environmental Effects	: Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
-----------------------	---

##### Product

Toxicity to fish	: LC50 Fish: 0.85 mg/l Exposure time: 96 hrs Test substance: Hazardous component
Toxicity to daphnia and other aquatic invertebrates	: EC50 Daphnia magna (Water flea): 0.02 mg/l Exposure time: 48 hrs Test substance: Hazardous component
Toxicity to algae	: LC50 Algae: < 1 mg/l Exposure time: 72 hrs Test substance: Hazardous component

##### Components

Toxicity to bacteria	: Methanol
----------------------	------------

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

> 1,000 mg/l

Tall Oil, DETA Imidazoline Acetates  
175 mg/l

#### Components

Toxicity to fish (Chronic toxicity) : Methanol  
NOEC: 7,900 mg/l  
Exposure time: 8.3 d

#### Persistence and degradability

The organic portion of this preparation is expected to be readily biodegradable.

#### Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%  
Water : 30 - 50%  
Soil : 70 - 90%

The portion in water is expected to be soluble or dispersible.

#### Bioaccumulative potential

The product will not bioaccumulate.

#### Other information

no data available

### Section: 13. DISPOSAL CONSIDERATIONS

The information presented only applies to the material as supplied. The classification or waste code may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Hazardous Waste: : D001

Disposal methods : The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

#### Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

##### Land transport (DOT)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.  
Technical name(s) : METHANOL, QUATERNARY AMMONIUM COMPOUND  
UN/ID No. : UN 2924  
Transport hazard class(es) : 3, 8  
Packing group : III  
Reportable Quantity (per package) : 14,280 lbs  
RQ Component : METHANOL

##### Air transport (IATA)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.  
Technical name(s) : METHANOL, QUATERNARY AMMONIUM COMPOUND  
UN/ID No. : UN 2924  
Transport hazard class(es) : 3, 8  
Packing group : III  
Reportable Quantity (per package) : 14,280 lbs  
RQ Component : METHANOL

##### Sea transport (IMDG/IMO)

Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.  
Technical name(s) : METHANOL, QUATERNARY AMMONIUM COMPOUND  
UN/ID No. : UN 2924  
Transport hazard class(es) : 3, 8  
Packing group : III

#### Section: 15. REGULATORY INFORMATION

##### EPCRA - Emergency Planning and Community Right-to-Know Act

##### CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Methanol	67-56-1	5000	14286

##### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

#### Acute Health Hazard

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

Methanol	67-56-1	30 - 60 %
----------	---------	-----------

#### California Prop 65

**WARNING:** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Methanol

67-56-1

#### INTERNATIONAL CHEMICAL CONTROL LAWS :

##### TOXIC SUBSTANCES CONTROL ACT (TSCA)

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

##### CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

##### AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

##### CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

##### EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

##### JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

##### KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

##### PHILIPPINES

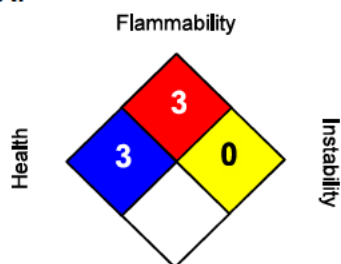
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

#### Section: 16. OTHER INFORMATION

## SAFETY DATA SHEET

### EC1317A CORROSION INHIBITOR

#### NFPA:



#### HMIS III:

HEALTH	3*
FLAMMABILITY	3
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,  
2 = Moderate, 3 = High  
4 = Extreme, \* = Chronic

Revision Date : 03/06/2015  
Version Number : 1.0  
Prepared By : Regulatory Affairs

**REVISED INFORMATION:** Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.  
For additional copies of an MSDS visit [www.nalco.com](http://www.nalco.com) and request access.

**ParaForce 2033**

Date Effective 09/12/2013

**Paraffin & Asphaltene Dispersant**

**Section One: Product Identification**

Trade Name	ParaForce 2033
Chemical Family	Paraffin & Asphaltene Dispersant
Chemical Formula	Confidential
CAS Number	Proprietary Blend

**Section Two: Composition Information on Hazardous Ingredients**

CAS Number	Component Common Name	TWA	STEL	PEL	Weight Percent
Confidential	Methyl Amyl Alcohol	NE	NE	NE	5 – 10%
52624-57-4	Polyoxyalkylene Glycol	NE	NE	NE	5 – 10%
Confidential	Proprietary Ingredients/Trade Secret	NE	NE	NE	15 – 25%
8008-20-6	Low Aromatic Feedstock Solvent	200 mg/m <sup>3</sup>	NE	NE	25 – 35%
64742-95-6	Petroleum Solvent	NE	NE	NE	25 – 35%
Confidential	Proprietary Fatty Acid Methyl Ester	NE	NE	NE	35 – 45%

**Schedule B, Harmonized Tariff Number for Import/Export**

3402903000 Surface-active preparations, containing any aromatic or modified aromatic surface active agents

**Section Three: Hazards Identification**

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.
Potential Health Effects	This product may cause eye, skin, or respiratory irritation.
Carcinogenicity (NTP)	This product is not believed to be carcinogenic.
Carcinogenicity (IARC)	Possible; human evidence inadequate.
Carcinogenicity (OSHA)	This product is not believed to be carcinogenic.

**Section Four: First Aid Measures**

Eyes	Flush eyes with water for at least 15 minutes. Seek medical attention.
Skin	Remove contaminated clothing. Flush skin with water.
Ingestion	Drink 3-4 glasses of water. Do not induce vomiting. Seek medical help immediately.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and call a physician.

**Section Five: Fire Fighting Measures**

Flammable Limits, Flash Point	144° F, PMCC
Flammable Limits in Air - LEL	>1.0%
Flammable Limits in Air - UEL	>10.0%
Auto Ignition Temperature	>650° F
General Hazards	Flammable; keep away from heat, sparks, and open flames.
Extinguishing Media	Dry chemical, carbon dioxide or water spray.
Fire Fighting Equipment	Wear self-contained breathing apparatus and protective clothing.
Fire and Explosion Hazards	Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

**Disclaimer** For further information, please contact the manufacturer listed above. This information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein. This Material Safety Data Sheet was prepared to comply with OSHA Hazardous Communication Standard (29 CFR 1910.1200) and the Workplace Hazardous Materials Information System (WHIMS).

# MSDS

## ParaForce 2033

Date Effective 09/12/2013

## Paraffin & Asphaltene Dispersant

<b>Hazardous Combustion Products</b>	Not available.
<b>Sensitivity to Static Discharge</b>	This material is flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe).
<b>Additional Information</b>	No additional information.

### Section Six: Accidental Release Measures

<b>Accidental Release Measures</b>	Eliminate all ignition sources. Contain spill and salvage as much material as possible. Then pick up the remaining with absorbent.
------------------------------------	--

### Section Seven: Handling and Storage

<b>Handling and Storage Guidelines</b>	Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharged. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements.
--	--

### Section Eight: Exposure Control/Personal Protection

<b>Personal Protective Equipment</b>	Wear appropriate equipment to prevent probability of exposure.
<b>Eye Protection</b>	Goggles or glasses with side shields.
<b>Skin Protection</b>	Wear impervious gloves as a standard handling procedure.
<b>Respiratory Protection</b>	Use NIOSH approved respiratory protection with certified air purifying respirator containing an organic vapor cartridge where exposure levels exceed 8 hour regulatory limits of 19 ppm.
<b>Engineering Controls</b>	Do not aerosolize.
<b>Mechanical Exhaust</b>	Required in confined spaces.
<b>Local Exhaust</b>	Recommended to keep fumes from concentrating.
<b>Emergency Response Protection</b>	No additional specialized equipment should be required.

### Section Nine: Physical and Chemical Properties

<b>Physical Form</b>	Liquid
<b>Color</b>	Light Amber
<b>Odor</b>	Solvent; Pungent
<b>Boiling Point</b>	>200° F
<b>Melting Point</b>	NA
<b>Freezing Point</b>	<-20° F
<b>Specific Gravity</b>	0.90 (+/- 0.02)
<b>Bulk Density</b>	7.55 lbs. / gallon
<b>pH</b>	6.5 – 8.5 (5% in IPA/Water)
<b>Solubility in Water</b>	Insoluble
<b>Evaporation Rate</b>	ND (n-Butyl Acetate = 1)
<b>Vapor Pressure</b>	<2 (mm Hg @ 68 °F)
<b>Vapor Density</b>	>3.0 (Air = 1)
<b>Volatile Organic(s)</b>	<800 gm/1000 ml.

**Disclaimer** For further information, please contact the manufacturer listed above. This information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein. This Material Safety Data Sheet was prepared to comply with OSHA Hazardous Communication Standard (29 CFR 1910.1200) and the Workplace Hazardous Materials Information System (WHIMS).

**ParaForce 2033**

Date Effective 09/12/2013

**Paraffin & Asphaltene Dispersant**

**Section Ten: Stability and Reactivity**

<b>Stability</b>	Stable at normal temperatures and operating conditions.
<b>Incompatibilities</b>	Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite, calcium hypochlorite, etc.
<b>Decomposition</b>	The use of hydrocarbon fuels in an area without adequate ventilation may result in hazardous levels of combustion products.
<b>Polymerization</b>	Polymerization will not occur.

**Section Eleven: Toxicological Information**

<b>Eye Irritation</b>	Eye contact may be irritating; rinse with water.
<b>Skin Irritation</b>	Skin contact may be irritating; wash affected area.
<b>Inhalation Toxicity</b>	Remove victim to fresh air; seek medical attention.
<b>Sensitization</b>	Not evaluated.
<b>Chronic/Carcinogenicity</b>	Not evaluated.
<b>Reproduction</b>	Not evaluated.
<b>Mutagenicity</b>	Not evaluated.
<b>Acute Oral Effects</b>	Not evaluated.
<b>Acute Dermal Toxicity</b>	Not evaluated.
<b>Additional Information</b>	If swallowed call physician or poison control center.

**Section Twelve: Ecological Information**

<b>Ecotoxicity</b>	Bluegill (freshwater) TLm = 2,990 ppm/24 Hr.
<b>Biological Oxygen Demand (BOD<sup>5</sup>)</b>	>50% biodegraded in soil in 28 days.
<b>Chemical Oxygen Demand</b>	Not evaluated.
<b>Activated Sludge Respiration Inhibition Test</b>	Not evaluated.
<b>Additional Information</b>	When released into the soil, this material may biodegrade to a moderate extent. When released into water, this material may biodegrade to a moderate extent. This material may bioaccumulate to some extent. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals.

**Section Thirteen: Disposal Considerations**

<b>Container Disposal Management</b>	Dispose of in accordance with local, state, and federal regulations.
<b>RCRA Hazard Class</b>	D001 – Ignitability, D002, U220 – Toluene, & U239 – Xylenes
<b>Waste Disposal Method</b>	Dispose of in accordance with local, state, and federal regulations.

**Section Fourteen: Transport Information**

<b>DOT Hazard Class</b>	Combustible Liquid.
<b>DOT Proper Shipping Name</b>	Combustible Liquid N.O.S., (Contains Petroleum Solvent), NA 1993, PG III, Guide 128
<b>Packaging Group</b>	III
<b>UN Number</b>	NA
<b>NA Number</b>	NA 1993
<b>Packaging Size</b>	Carboys/Pails, Drums, and Bulk.

**Disclaimer** For further information, please contact the manufacturer listed above. This information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein. This Material Safety Data Sheet was prepared to comply with OSHA Hazardous Communication Standard (29 CFR 1910.1200) and the Workplace Hazardous Materials Information System (WHIMS).

**ParaForce 2033**  
 Date Effective 09/12/2013

**Paraffin & Asphaltene Dispersant**







**Section Fifteen: Regulatory Information**

SARA 302/304 RQ	NA
SARA 302/304 TPQ	NA
SARA 311/312 Acute	Yes
SARA 311/312 Chronic	Yes
SARA 311/312 Fire	Yes
SARA 311/312 Pressure	NA
SARA 311/312 Reactivity	NA
SARA 313 List	NA
CERCLA RQ	NA
TSCA Status	All components are registered on TSCA inventory.
CAA	NA
CWA	NA
Additional Information	No additional information available.

**Section Sixteen: Other Information**

HMIS Hazard Classification	Health	Flammability	Reactivity	Personal Protection
Classification Code	2	2	0	D
NFPA Hazard Classification	Health	Flammability	Instability	Special Hazards
Classification Code or Markings	2	2	0	

**Explanation of NFPA Special Symbols**

	Oxidizer; a chemical that can increase the rate of combustion or fire.
	Reactive with water; avoid using water when fighting a fire involving material.
	Corrosive material(s); can be corrosive in either an acid or alkaline state.
	Poison or highly toxic material(s).
	Explosive material(s); redundant notation of instability.
	Marine Pollutant(s); extremely harmful to aquatic environments.

**Disclaimer** For further information, please contact the manufacturer listed above. This information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein. This Material Safety Data Sheet was prepared to comply with OSHA Hazardous Communication Standard (29 CFR 1910.1200) and the Workplace Hazardous Materials Information System (WHIMS).

**ParaForce 2033**  
 Date Effective 09/12/2013

**Paraffin & Asphaltene Dispersant**

**Explanation of Abbreviations**

<b>ASTM</b>	American Society For Testing and Materials.
<b>BOD<sup>5</sup></b>	Biological Oxygen Demand, 5-Day Test Standard.
<b>CAA</b>	Clean Air Act.
<b>CAS</b>	Chemical Abstracts Service.
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation & Liability Act.
<b>CONF</b>	Confidential.
<b>CWA</b>	Clean Water Act.
<b>DOT</b>	U.S. Department of Transportation.
<b>EPA</b>	U.S. Environmental Protection Agency.
<b>HMIS</b>	Hazardous Materials Identification System.
<b>IARC</b>	International Agency for Research on Cancer.
<b>LEL</b>	Lower Explosive Limits.
<b>Mg/M<sup>3</sup></b>	Milligrams per Cubic Meter.
<b>Mm/Hg</b>	Millimeters of Mercury; Measurement of Air Pressure.
<b>NA</b>	Not Applicable.
<b>ND</b>	Not Determined.
<b>NE</b>	None Established.
<b>NFPA</b>	National Fire Protection Association.
<b>NTP</b>	National Toxicology Program.
<b>OSHA</b>	U.S. Occupational Health and Safety Administration.
<b>PEL</b>	Permissible Exposure Limit.
<b>pH</b>	Negative Logarithm of the Hydrogen Ion; Measurement of Acidity or Alkalinity.
<b>PMCC</b>	Pensky-Martens Closed Cup Flash Point Test.
<b>PPM</b>	Parts per Million.
<b>RCRA</b>	Resource Conservation and Recovery Act.
<b>RQ</b>	Release Quantity.
<b>SARA</b>	Superfund Amendments and Reauthorization Act.
<b>STEL</b>	Short-Term Exposure Limit.
<b>TLV</b>	Threshold Limit Value.
<b>TPQ</b>	Threshold Planning Quantities.
<b>TSCA</b>	Toxic Substances Control Act.
<b>TWA</b>	Time-Weighted Average or Absolute Value.
<b>UEL</b>	Upper Explosive Limits.
<b>VOC</b>	Volatile Organic Compounds.

**Disclaimer** For further information, please contact the manufacturer listed above. This information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein. This Material Safety Data Sheet was prepared to comply with OSHA Hazardous Communication Standard (29 CFR 1910.1200) and the Workplace Hazardous Materials Information System (WHIMS).

## Soda Ash (Sodium Carbonate)

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier:

Product name	: Soda Ash (Sodium carbonate)
Synonyms	: carbonic acid disodium salt; carbonic acid sodium salt; CASWELL NO. 752; chrystol carbonate; crystol carbonate (=sodium carbonate); disodium carbonate; natural ash; Na-X; snowlite 1; soda ash; soda, crystals; soda (=sodium carbonate); anhydrous soda; ash; bisodium carbonate; calcined soda(=sodium carbonate); sodium carbonate, anhydrous; sodium carbonate, anhydrous ASTM D458; sodium carbonate, anhydrous GE materials D4D5; sodium carbonate, anhydrous powder; sodium carbonate, crude; sodium carbonate, granular; Solvay soda; synthetic ash; washing soda (= sodium carbonate)
Registration number REACH	: 01-2119485498-19-0011
Product type REACH	: Substance/mono-constituent
CAS number	: 497-19-8
EC index number	: 011-005-00-2
EC number	: 207-838-8
RTECS number	: VZ4050000
Molecular mass	: 105.99 g/mol
Formula	: Na <sub>2</sub> CO <sub>3</sub>

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against:

##### 1.2.1

##### Relevant identified uses

Chemical raw material  
Glass production: raw material  
Detergent: component  
Acidity regulator  
Paper production: auxiliary substance

##### 1.2.2 Uses advised against

No uses advised against known

#### 1.3 Details of the supplier of the safety data sheet:

##### Supplier of the safety data sheet

Deep South Chemical, Inc.  
229 Millstone Rd.  
Broussard, LA 70518

##### Manufacturer of the product

Deep South Chemical, Inc.  
229 Millstone Rd.  
Broussard, LA 70518

#### 1.4 Emergency telephone number:

24h/24h:

CHEMTREC : 1-800-424-9300

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture:

##### 2.1.1 Classification according to Regulation EC No 1272/2008

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
Eye Irrit.	category 2	H319: Causes serious eye irritation.

##### 2.1.2 Classification according to Directive 67/548/EEC-1999/45/EC

Classified as dangerous in accordance with the criteria of Directives 67/548/EEC and 1999/45/EC

Xi; R36 - Irritating to eyes.

Publication date: 2013-03-13

Date of revision: 2015-06-18

# Soda Ash (Sodium carbonate)

## 2.2 Label elements:

Labelling according to Regulation EC No 1272/2008 (CLP)



Signal word

Warning

H-statements

H319

Causes serious eye irritation.

P-statements

P280

Wear eye protection/face protection.

P264

Wash hands thoroughly after handling.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313

If eye irritation persists: Get medical advice/attention.

## 2.3 Other hazards:

## SECTION 3: Composition/information on ingredients

### 3.1 Substances:

Name (REACH Registration No)	CAS No EC No	Conc. (C)	Classification according to DSD/DPD	Classification according to CLP	Note	Remark
sodium carbonate (01-2119485498-19)	497-19-8 207-838-8	C>99 %	Xi; R36	Eye Irrit. 2; H319	(1)	Mono-constituent

(1) For R-phrases and H-statements in full: see heading 16

### 3.2 Mixtures:

Not applicable

## SECTION 4: First aid measures

### 4.1 Description of first aid measures:

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

After eye contact:

Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Consult a doctor/medical service if you feel unwell.

### 4.2 Most important symptoms and effects, both acute and delayed:

#### 4.2.1 Acute symptoms

After inhalation:

AFTER INHALATION OF DUST: Dry/sore throat. Coughing. Slight irritation. EXPOSURE TO HIGH CONCENTRATIONS: Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Respiratory difficulties.

After skin contact:

Not irritating.

After eye contact:

Irritation of the eye tissue. Lacrimation.

After ingestion:

AFTER ABSORPTION OF HIGH QUANTITIES: Nausea. Abdominal pain. Irritation of the gastric/intestinal mucosa.

#### 4.2.2 Delayed symptoms

No effects known.

### 4.3 Indication of any immediate medical attention and special treatment needed:

If applicable and available it will be listed below.

Publication date: 2013-03-13

Date of revision: 2015-06-18

# Soda Ash (Sodium Carbonate)

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media:

#### 5.1.1 Suitable extinguishing media:

Adapt extinguishing media to the environment.

#### 5.1.2 Unsuitable extinguishing media:

No unsuitable extinguishing media known.

### 5.2 Special hazards arising from the substance or mixture:

Upon combustion: CO and CO<sub>2</sub> are formed. Reacts on exposure to water (moisture) with (some) metals.

### 5.3 Advice for firefighters:

#### 5.3.1 Instructions:

No specific fire-fighting instructions required.

#### 5.3.2 Special protective equipment for fire-fighters:

Gloves. Safety glasses. Protective clothing. Dust cloud production: compressed air/oxygen apparatus. Heat/fire exposure: compressed air/oxygen apparatus.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures:

Prevent dust cloud formation, e.g. by wetting. No naked flames.

#### 6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

#### 6.1.2 Protective equipment for emergency responders

Gloves. Safety glasses. Protective clothing. Dust cloud production: compressed air/oxygen apparatus.

##### Suitable protective clothing

See heading 8.2

### 6.2 Environmental precautions:

Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray. Violent exothermic reaction with (some) acids: release of harmful gases/vapours (carbon dioxide). Carbon dioxide is heavier than air and will collect in ducts, drains and low lying areas.

### 6.3 Methods and material for containment and cleaning up:

Prevent dust cloud formation. Scoop solid spill into closing containers. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

### 6.4 Reference to other sections:

See heading 13.

## SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 7.1 Precautions for safe handling:

Avoid raising dust. Keep away from naked flames/heat. Observe normal hygiene standards. Keep container tightly closed.

### 7.2 Conditions for safe storage, including any incompatibilities:

#### 7.2.1 Safe storage requirements:

Store in a cool area. Store in a dry area. Keep container in a well-ventilated place. Keep out of direct sunlight. Meet the legal requirements.

#### 7.2.2 Keep away from:

Heat sources, (strong) acids, metals, water/moisture.

#### 7.2.3 Suitable packaging material:

No data available

#### 7.2.4 Non suitable packaging material:

Aluminium, zinc.

### 7.3 Specific end use(s):

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters:

#### 8.1.1 Occupational exposure

##### a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

Publication date: 2013-03-13

Date of revision: 2015-06-18

# Soda Ash (Sodium carbonate)

## b) National biological limit values

If limit values are applicable and available these will be listed below.

### 8.1.2 Sampling methods

Product name	Test	Number
No data available		

Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

### 8.1.4 DNEL/PNEC values

#### DNEL - Workers

sodium carbonate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	10 mg/m <sup>3</sup>	

#### DNEL - General population

sodium carbonate

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Acute local effects inhalation	10 mg/m <sup>3</sup>	

### 8.1.5 Control banding

If applicable and available it will be listed below.

## 8.2 Exposure controls:

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 8.2.1 Appropriate engineering controls

Avoid raising dust. Keep away from naked flames/heat. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

### 8.2.2 Individual protection measures, such as personal protective equipment

Observe normal hygiene standards. Keep container tightly closed. Do not eat, drink or smoke during work.

#### a) Respiratory protection:

Dust production: dust mask with filter type P1.

#### b) Hand protection:

Gloves.

- materials for protective clothing (good resistance)

Butyl rubber, PVC.

#### c) Eye protection:

Safety glasses. In case of dust production: protective goggles.

#### d) Skin protection:

Protective clothing.

### Environmental exposure controls:

See headings 6.2, 6.3 and 13

## 9.1 Information on basic physical and chemical properties:

Physical form	Crystalline solid
	Crystalline powder
	Grains
	Lumps
Odour	Odourless
Odour threshold	Not applicable
Colour	Colourless to white
Particle size	694 µm
Explosion limits	Not applicable
Flammability	Non combustible
Log Kow	-6.19 ; Estimated value
Dynamic viscosity	Data not required
Kinematic viscosity	Data not required
Melting point	851 °C
Boiling point	Data not required
Flash point	Not required: exemption according to REACH
Evaporation rate	Not applicable
Vapour pressure	Not required: exemption according to REACH

Publication date: 2013-03-13

Date of revision: 2015-06-18



# Soda Ash (Sodium carbonate)

No physical hazard class

## 9.2 Other information:

Absolute density 2530 kg/m<sup>3</sup>

Relative vapour density	Not applicable
Solubility	water ; 212.5 g/l ; 20 °C
Relative density	2.52-253 ; 20 °C
Decomposition temperature	1600 °C
Auto-ignition temperature	>400 °C
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	11.6 ; 5.0 %

10.1 F acti

vity:

Substance has basic reaction.

## 10.2 Chemical stability:

Hygroscopic.

## 10.3 Possibility of hazardous reactions:

Reacts on exposure to water (moisture) with (some) metals. Violent exothermic reaction with (some) metals. Reacts with (strong) oxidizers.

## 10.4 Conditions to avoid:

Avoid raising dust. Keep away from naked flames/heat.

## 10.5 Incompatible materials:

(strong) acids, metals, water/moisture, aluminium, zinc.

## 10.6 Hazardous decomposition products:

Violent exothermic reaction with (some) acids: release of harmful gases/vapours (carbon dioxide). Upon combustion: CO and CO<sub>2</sub> are formed.

## 11.1 Information on toxicological effects:

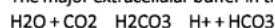
### 11.1.1 Test results

#### - Toxicokinetics: summary

Toxicokinetics (absorption, metabolism, distribution and elimination)

The toxicokinetics of sodium carbonate are well understood. When sodium carbonate comes into contact with body fluids it will dissociate into carbonate and sodium. The carbonate could potentially increase the pH of the blood.

The major extracellular buffer in the blood and the interstitial fluid of vertebrates is the bicarbonate buffer system, described by the following equation:



Carbon dioxide from the tissues diffuses rapidly into red blood cells, where it is hydrated with water to form carbonic acid. This reaction is accelerated by carbonic anhydrase, an enzyme present in high concentrations in red blood cells. The carbonic acid formed dissociates into bicarbonate and hydrogen ions. Most of the bicarbonate ions diffuse into the plasma. Since the ratio of H<sub>2</sub>CO<sub>3</sub> to dissolved CO<sub>2</sub> is constant at equilibrium, pH may be expressed in terms of bicarbonate ion concentration and partial pressure of CO<sub>2</sub> by means of the Henderson-Hasselbach equation:

$$\text{pH} = \text{pK} + \log [\text{HCO}_3^-] / \text{aPCO}_2$$

The blood plasma of man normally has a pH of 7.40. Should the pH fall below 7.0 or rise above 7.8, irreversible damage may occur. Compensatory mechanisms for acid-base disturbances function to alter the ratio of HCO<sub>3</sub> to PCO<sub>2</sub>, returning the pH of the blood to normal. Thus, metabolic acidosis may be compensated for by hyperventilation and increased renal absorption of HCO<sub>3</sub>. Metabolic alkalosis may be compensated for by hypoventilation and the excess of HCO<sub>3</sub>- in the urine (Johnson and Swanson, 1987). Renal mechanisms are usually sufficient to restore the acid-base balance (McEvoy, 1994). The uptake of sodium, via exposure to sodium carbonate, is much less than the uptake of sodium via food. Therefore, sodium carbonate is not expected to be systemically available in the body. Furthermore it should be realised that an oral uptake of sodium carbonate will result in a neutralisation in the stomach due to the gastric acid.

#### Acute toxicity

##### sodium carbonate

Route of exposure	Parameter	Method	Value	Exposure time	Species	Gender	Value determination
Oral	LD50		2800 mg/kg		Rat	Male/female	Experimental value
Dermal	LD50		2000 mg/kg		Rabbit		Experimental value
Inhalation				2 h	Rat	Male	Experimental value
Conclusion							
	LC50		2.30 mg/l			Publication date: 2013-03-13	

Date of revision: 2015-06-18

## Soda Ash (Sodium Carbonate)

Low acute toxicity by the oral route

Low acute toxicity by the dermal route

Low acute toxicity by the inhalation route

### Corrosion/irritation

sodium carbonate

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination
Eye	Irritating	EPA 16 CFR 1500.42		1; 2; 3; 4; 7; 10; 14 days	Rabbit	Experimental value
Eye	Highly irritating	Equivalent to OECD		1; 24; 48; 72; 168	Rabbit	Experimental value
Dermal	Not irritating	405 OECD 404		hours 24; 48; 72 hours	Rabbit	Experimental value
Inhalation (aerosol)	Slightly irritating					Literature

## Conclusion

Causes serious eye irritation.

Not classified as irritating to the skin

Not classified as irritating to the respiratory system

### Respiratory or skin sensitisation

sodium carbonate

Route of exposure	Result	Method	Exposure time	Observation time point determination	Species	Gender	Value
Skin							Not determined, exemption according to REACH
Inhalation							Not determined, exemption according to REACH

## Conclusion

Not classified as sensitizing for skin

Not classified as sensitizing for inhalation

### Specific target organ toxicity

sodium carbonate

[illegible]

## Conclusion

Supplementary classification for repeated dose toxicity was not considered necessary

### Mutagenicity (in vitro)

sodium carbonate

Result	Method	Test substrate	Effect	Value determination
Negative	Other	Escherichia coli		Experimental value
Ambiguous	OECD 471	Bacteria ( <i>S.typhimurium</i> )		Read-across

### Mutagenicity (in vivo)

sodium carbonate

Result	Method	Exposure time	Test substrate	Gender	Organ	Value determination
						No data available

### Carcinogenicity

sodium carbonate

[illegible]


[illegible]


--	--	--	--	--	--	--

[illegible]

# Soda Ash (Sodium Carbonate)

## Reproductive toxicity

### sodium carbonate

	Parameter	Method	Value	Exposure		Gender	Effect	Organ	Value determination
Developmental	NOAEL	Other	≥ 245 mg/kg			Rat			Experimental value
Effects on fertility			bw/day						Not determined, exemption according to REACH

### Conclusion CMR

Not classified for carcinogenicity

Not classified for mutagenic or genotoxic toxicity

Not classified for reprotoxic or developmental toxicity

## Toxicity other effects

### sodium carbonate

No (test) data available

## Chronic effects from short and long-term exposure

### sodium carbonate

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Red skin. Dry skin. Tingling/irritation of the skin. Affection of the nasal septum.

## SECTION 12: Ecological information

### 12.1 Toxicity:

#### sodium carbonate

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt	
Acute toxicity fishes	LC50	Other	300 mg/l	96 h	Lepomis			Experimental value
Acute toxicity invertebrates	EC50	Other	200 - 227 mg/l	48 h	Ceriodaphnia sp.	Semi-static	Fresh water	Experimental value
Toxicity algae and other aquatic plants	EC50		242 mg/l	5 day(s)	Algae			Experimental value

### Conclusion

Slightly harmful to fishes (LC50(96h) 100-1000 mg/l)

Practically non-toxic to algae (EC50 >100 mg/l)

Slightly harmful to invertebrates (EC50 (48h): 100 - 1000 mg/l)

pH shift

Not classified as dangerous for the environment according to the criteria of Directive 67/548/EEC

Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

### 12.2 Persistence and degradability:

Biodegradability: not applicable

### 12.3 Bioaccumulative potential:

#### sodium carbonate

#### Log Kow

Method	Remark	Value	Temperature	Value determination
		-6.19		Estimated value

### Conclusion

Low potential for bioaccumulation (Log Kow < 4)

### 12.4 Mobility in soil:

Low potential for adsorption in soil

### 12.5 Results of PBT and vPvB assessment:

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances.

### 12.6 Other adverse effects:

Publication date: 2013-03-13

Date of revision: 2015-06-18



# Soda Ash (Sodium Carbonate)

## sodium carbonate

### Global warming potential (GWP)

Not included in the list of substances which may contribute to the greenhouse effect (Regulation (EC) No 842/2006)

### Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

## SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 13.1 Waste treatment methods:

#### 13.1.1 Provisions relating to waste

Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).

16 05 07\* (discarded inorganic chemicals consisting of or containing dangerous substances). Depending on branch of industry and production process, also other waste codes may be applicable. Hazardous waste according to Directive 2008/98/EC.

#### 13.1.2 Disposal methods

Precipitate/make insoluble. Remove to an authorized dump (Class I). Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. May be discharged to wastewater treatment installation. Do not discharge into drains or the environment.

#### 13.1.3 Packaging/Container

Waste material code packaging (Directive 2008/98/EC).

15 01 10\* (packaging containing residues of or contaminated by dangerous substances).

## SECTION 14: Transport information

### Road (ADR)

#### 14.1 UN number:

Transport	Not subject
-----------	-------------

#### 14.2 UN proper shipping name:

#### 14.3 Transport hazard class(es):

Hazard identification number	
Class	
Classification code	

#### 14.4 Packing group:

Packing group	
Labels	

#### 14.5 Environmental hazards:

Environmentally hazardous substance mark	no
--	----

#### 14.6 Special precautions for user:

Special provisions	
Limited quantities	

### Rail (RID)

#### 14.1 UN number:

Transport	Not subject
-----------	-------------

#### 14.2 UN proper shipping name:

#### 14.3 Transport hazard class(es):

Hazard identification number	
Class	
Classification code	

#### 14.4 Packing group:

Packing group	
Labels	

#### 14.5 Environmental hazards:

Environmentally hazardous substance mark	no
--	----

#### 14.6 Special precautions for user:

Special provisions	
Limited quantities	

### Inland waterways (ADN)

#### 14.1 UN number:

Transport	Not subject
-----------	-------------

Publication date: 2013-03-13

Date of revision: 2015-06-18

# Soda Ash (Sodium Carbonate)

14.2 UN proper shipping name:

14.3 Transport hazard class(es):

Class	
Classification code	

14.4 Packing group:

Packing group	
Labels	

14.5 Environmental hazards:

Environmentally hazardous substance mark	no
--	----

14.6 Special precautions for user:

Special provisions	
Limited quantities	

## Sea (IMDG/IMSBC)

14.1 UN number:

Transport	Not subject
-----------	-------------

14.2 UN proper shipping name:

14.3 Transport hazard class(es):

Class	
-------	--

14.4 Packing group:

Packing group	
Labels	

14.5 Environmental hazards:

Marine pollutant	-
Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	
Limited quantities	

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:

Annex II of MARPOL 73/78	
--------------------------	--

## Air (ICAO-TI/IATA-DGR)

14.1 UN number:

Transport	Not subject
-----------	-------------

14.2 UN proper shipping name:

14.3 Transport hazard class(es):

Class	
-------	--

14.4 Packing group:

Packing group	
Labels	

14.5 Environmental hazards:

Environmentally hazardous substance mark	no
--	----

14.6 Special precautions for user:

Special provisions	
Passenger and cargo transport: limited quantities: maximum net quantity per packaging	

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

#### European legislation:

European drinking water standards

Maximum concentration in drinking water: 200 mg/l (sodium) (Directive 98/83/EC)

Volatile organic compounds (VOC)

Not applicable (inorganic)

#### National legislation The Netherlands

Waste identification (the	
Waterbezwaarlijkheid	11

#### National legislation Germany

TA-Luft	TA-Luft Klasse 5.2.1
WGK	1; Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)

Publication date: 2013-03-13

Date of revision: 2015-06-18

# Soda Ash (Sodium Carbonate)

## National legislation France

No data available

## National legislation Belgium

No data available

### 15.2 Chemical safety assessment:

A chemical safety assessment has been performed.

## SECTION 16: Other information

Information based on classification according to CLP

### Labelling according to Directive 67/548/EEC-1999/45/EC (DSD/DPD)

Enumerated in substance list Annex I of Directive 67/548/EEC et sequens

#### Labels



Irritant

#### R-phrases

36 Irritating to eyes

#### S-phrases

(02) (Keep out of the reach of children)

22 Do not breathe dust

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

#### Full text of any R-phrases referred to under headings 2 and 3:

R36 Irritating to eyes

#### Full text of any H-statements referred to under headings 2 and 3:

H319 Causes serious eye irritation.

(\*) = INTERNAL CLASSIFICATION BY DSC

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive

DPD Dangerous Preparation Directive

CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

The information in this safety data sheet is based on data and samples provided to DSC. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. DSC does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your DSC licence agreement or when this is failing the general conditions of DSC. All intellectual property rights to this sheet are the property of DSC and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.

**SAFETY DATA SHEET****Product Trade Name:** X-TEND® II**Revision Date:** 11-Dec-2015**Revision Number:** 13**1. Identification****1.1. Product Identifier**

**Product Trade Name:** X-TEND® II  
**Synonyms:** None  
**Chemical Family:** Polymer  
**Internal ID Code** HM003790

**1.2 Recommended use and restrictions on use**

**Application:** Viscosifier  
**Uses Advised Against** No information available

**1.3 Manufacturer's Name and Contact Details****Manufacturer/Supplier**

Baroid Fluid Services  
Product Service Line of Halliburton  
P.O. Box 1675  
Houston, TX 77251  
Telephone: (281) 575-5000  
Emergency Telephone: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962

Halliburton Energy Services  
645 - 7th Ave SW Suite 2200  
Calgary, AB  
T2P 4G8  
Canada

**Prepared By** Chemical Stewardship  
Telephone: 1-281-871-6107  
e-mail: fdunexchem@halliburton.com

**1.4. Emergency telephone number**

**Emergency Telephone Number** 1-866-519-4752 or 1-760-476-3962

**2. Hazard(s) Identification****2.1 Classification in accordance with paragraph (d) of §1910.1200**

As adopted by the competent authority, this product does not require an SDS or hazard warning label.

Not classified

**2.2. Label Elements**

**Hazard Pictograms**

**Signal Word** Warning

**Hazard Statements** Not Hazardous

---

May form combustible dust concentrations in air.

**Precautionary Statements**

<b>Prevention</b>	None
<b>Response</b>	None
<b>Storage</b>	None
<b>Disposal</b>	None

**2.3 Hazards not otherwise classified**

None known

**3. Composition/information on Ingredients**

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Acrylic polymer	Proprietary	60 - 100%	Combustible Dust

The exact percentage (concentration) of the composition has been withheld as proprietary.

**4. First-Aid Measures****4.1. Description of first aid measures**

<b>Inhalation</b>	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
<b>Eyes</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
<b>Skin</b>	Wash with soap and water. Get medical attention if irritation persists.
<b>Ingestion</b>	Under normal conditions, first aid procedures are not required.

**4.2 Most important symptoms/effects, acute and delayed**

No significant hazards expected.

**4.3. Indication of any immediate medical attention and special treatment needed**

<b>Notes to Physician</b>	Treat symptomatically.
---------------------------	------------------------

**5. Fire-fighting measures****5.1. Extinguishing media****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

**Extinguishing media which must not be used for safety reasons**

None known.

**5.2 Specific hazards arising from the substance or mixture****Special Exposure Hazards**

Decomposition in fire may produce harmful gases.

**5.3 Special protective equipment and precautions for fire-fighters****Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

## 6. Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Spills of this product are very slippery.  
See Section 8 for additional information

### 6.2. Environmental precautions

None known.

### 6.3. Methods and material for containment and cleaning up

Scoop up and remove.

## 7. Handling and storage

### 7.1. Precautions for Safe Handling

#### Handling Precautions

Avoid creating or inhaling dust.

#### Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Storage Information

Store away from oxidizers. Store in a cool, dry location.

## 8. Exposure Controls/Personal Protection

### 8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Acrylic polymer	Proprietary	Not applicable	Not applicable

### 8.2 Appropriate engineering controls

**Engineering Controls** Use in a well ventilated area.

### 8.3 Individual protection measures, such as personal protective equipment

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** Not normally needed. But if significant exposures are possible then the following respirator is recommended:

Dust/mist respirator. (N95, P2/P3)

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Wear safety glasses or goggles to protect against exposure.

**Other Precautions** None known.

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

<b>Physical State:</b> Solid	<b>Color:</b> White
<b>Odor:</b> Odorless	<b>Odor</b> No information available
	<b>Threshold:</b>

Property

Values

Remarks/ - Method

pH:	No data available
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	> 100 °C / > 212 °F Cleveland Open Cup (COC)
Flammability (solid, gas)	No data available
upper flammability limit	No data available
lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	0.8 - 1
Water Solubility	Miscible with water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

**9.2. Other information**

VOC Content (%) No data available

## 10. Stability and Reactivity

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

None anticipated

**10.5. Incompatible Materials**

Strong oxidizers.

**10.6. Hazardous Decomposition Products**

Carbon monoxide and carbon dioxide.

## 11. Toxicological Information

**11.1 Information on likely routes of exposure**

Principle Route of Exposure Eye or skin contact, inhalation.

**11.2 Symptoms related to the physical, chemical and toxicological characteristics****Acute Toxicity**

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation.
Skin Contact	Prolonged or repeated contact may cause slight skin irritation.
Ingestion	None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 0.1%

are chronic health hazards.

### 11.3 Toxicity data

#### Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acrylic polymer	Proprietary	> 2000 mg/kg (Rat)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Acrylic polymer		Non-irritating to the skin (Rabbit)

Substances	CAS Number	Eye damage/irritation
Acrylic polymer		Non-irritating to the eye (Rabbit)

Substances	CAS Number	Skin Sensitization
Acrylic polymer		Not regarded as a sensitizer.

Substances	CAS Number	Respiratory Sensitization
Acrylic polymer		No information available

Substances	CAS Number	Mutagenic Effects
Acrylic polymer		In vitro tests did not show mutagenic effects

Substances	CAS Number	Carcinogenic Effects
Acrylic polymer		No data of sufficient quality are available.

Substances	CAS Number	Reproductive toxicity
Acrylic polymer		Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Acrylic polymer		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Acrylic polymer		No data of sufficient quality are available.

Substances	CAS Number	Aspiration hazard
Acrylic polymer		Not applicable

## 12. Ecological Information

### 12.1. Toxicity

#### Ecotoxicity Effects

#### Product Ecotoxicity Data

No data available

#### Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Acrylic polymer	Proprietary	No information available	No information available	No information available	No information available

### 12.2. Persistence and degradability

Biodegradable.

Substances	CAS Number	Persistence and Degradability
Acrylic polymer	Proprietary	No information available

### 12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
------------	------------	---------

Acrylic polymer	Proprietary	No information available
-----------------	-------------	--------------------------

**12.4. Mobility in soil**

Substances	CAS Number	Mobility
Acrylic polymer	Proprietary	No information available

**12.5 Other adverse effects**

No information available

**13. Disposal Considerations****13.1. Waste treatment methods**

**Disposal Method** Bury in a licensed landfill according to federal, state, and local regulations.  
**Contaminated Packaging** Follow all applicable national or local regulations.

**14. Transport Information****US DOT**

UN Number: Not restricted  
 UN Proper Shipping Name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**US DOT Bulk**

DOT (Bulk) Not applicable

**Canadian TDG**

UN Number: Not restricted  
 UN Proper Shipping Name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**IMDG/IMO**

UN Number: Not restricted  
 UN Proper Shipping Name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**IATA/ICAO**

UN Number: Not restricted  
 UN Proper Shipping Name: Not restricted  
 Transport Hazard Class(es): Not applicable  
 Packing Group: Not applicable  
 Environmental Hazards: Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable

**Special Precautions for User:** None

**15. Regulatory Information****US Regulations**

**US TSCA Inventory** All components listed on inventory or are exempt.

**TSCA Significant New Use Rules - S5A2**

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Acrylic polymer	Proprietary	Not applicable

**EPA SARA Title III Extremely Hazardous Substances**

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Acrylic polymer	Proprietary	Not applicable

**EPA SARA (311,312) Hazard Class**

None

**EPA SARA (313) Chemicals**

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Acrylic polymer	Proprietary	Not applicable	Not applicable

**EPA CERCLA/Superfund Reportable Spill Quantity**

Substances	CAS Number	CERCLA RQ
Acrylic polymer	Proprietary	Not applicable

**EPA RCRA Hazardous Waste Classification**

If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

**California Proposition 65** The California Proposition 65 regulations apply to this product.

**MA Right-to-Know Law** One or more components listed.

**NJ Right-to-Know Law** One or more components listed.

**PA Right-to-Know Law** One or more components listed.

**NFPA Ratings:** Health 1, Flammability 1, Reactivity 0  
**HMIS Ratings:** Health 1, Flammability 1, Physical Hazard 0, PPE: B

**Canadian Regulations**

**Canadian DSL Inventory** All components listed on inventory or are exempt.

**16. Other information**

**Preparation Information**

**Prepared By** Chemical Stewardship  
 Telephone: 1-281-871-6107  
 e-mail: fdunexchem@halliburton.com

**Revision Date:** 11-Dec-2015

**Reason for Revision** SDS sections updated:  
 2

**Additional information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

---

**Key or legend to abbreviations and acronyms**

bw – body weight  
CAS – Chemical Abstracts Service  
EC50 – Effective Concentration 50%  
ErC50 – Effective Concentration growth rate 50%  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL50 – Lethal Loading 50%  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NIOSH – National Institute for Occupational Safety and Health  
NTP – National Toxicology Program  
OEL – Occupational Exposure Limit  
PEL – Permissible Exposure Limit  
ppm – parts per million  
STEL – Short Term Exposure Limit  
TWA – Time-Weighted Average  
UN – United Nations  
h - hour  
mg/m<sup>3</sup> - milligram/cubic meter  
mm - millimeter  
mmHg - millimeter mercury  
w/w - weight/weight  
d - day

**Key literature references and sources for data**

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**End of Safety Data Sheet**

## APPENDIX C: BULK CONTAINERS

### Nobles Grade Bulk Containers

Tank ID	Contents	Volume (barrels)	Tank Construction Material
1	Crude Oil	1,000	Steel
2	Crude Oil	1,000	Steel
3	Crude Oil	1,000	Steel
4	Crude Oil	1,000	Steel
5	Crude Oil	1,000	Steel
6	Crude Oil	1,000	Steel
7	Produced Water	1,000	Fiberglass
8	Produced Water	1,000	Fiberglass
9	Produced Water	1,000	Fiberglass
10	Produced Water	1,000	Fiberglass
11	Produced Water	1,000	Fiberglass
12	Produced Water	1,000	Fiberglass

Wesley Hanna  
2020-07-21 16:17:00

There should be 6 total water tanks and 6 oil tanks

### Tamiami Bulk Containers

Tank ID	Contents	Volume (barrels)	Tank Construction Material
1	Crude Oil	1,000	Steel
2	Crude Oil	1,000	Steel
3	Crude Oil	1,000	Steel
4	Crude Oil	1,000	Steel
5	Produced Water	1,000	Fiberglass
6	Produced Water	1,000	Fiberglass
7	Produced Water	1,000	Fiberglass
8	Produced Water	1,000	Fiberglass

Wesley Hanna  
2020-07-21 16:19:00

There should be 4 total water tanks

**APPENDIX D: INSPECTION FORMS**

---

<b>FACILITY:</b>  <b>CONTAINER I.D. #</b> <small>use one form for multiple tanks within same secondary containment area and enter tank numbers above</small>				<b>ABOVEGROUND STORAGE TANK</b>  <b>VISUAL INSPECTION FORM</b>					
YEAR:				PIPING					
		*SECONDARY CONTAINMENT INTEGRITY	**TANK EXTERIOR INTEGRITY	EXTERIOR INTEGRITY ***TANK VALVE	DRAIN VALVE SECURE	LIQUID ACCUMULATION REMOVAL	STAINED SOIL AROUND CONTAINMENT AREA	INSPECTOR NAME	SIGNATURE
MONTH	DAY								
JANUARY									
FEBRUARY									
MARCH									
APRIL									
MAY									
JUNE									
JULY									
AUGUST									
SEPTEMBER									
OCTOBER									
NOVEMBER									
DECEMBER									
<small>* check interstitial space on double-wall tank, note any signs of cracking or degradation of concrete secondary containment</small> <small>** note any signs of wetting, discoloration, blistering, corrosion or other signs of structural damage or leaks</small> <small>***valve on pump station tank must be closed and locked when pump is not in use</small> <b>For any deficiency found, enter description of problem, how and when it was resolved and initials of person confirming resolution:</b>									
<small>Visual Inspection Form</small>									

## APPENDIX E: LOADING/UNLOADING PROCEDURES

These oil handling procedures are designed to prevent oil spills and discharges as described in 40 CFR 110.3, including discharges of oil that meet any of the following criteria:

- Violate applicable water quality standards;
- Cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines; and
- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

**Prior to unloading or loading of oil**, facility personnel should check:

- Spill equipment is present at the transfer location and is adequate to prevent an off-site discharge of oil;
- Receiving vessel has enough capacity to hold volume of liquids being transferred;
- Liquid level indicator on transfer vehicle is operating properly; and
- Transfer pump shows no signs of leaking.

**During unloading or loading of oil**, facility personnel will oversee vendors. Vendors and facility personnel must comply with the minimum requirements for loading and unloading, including, but not limited to:

- No smoking;
- Engine stopped and handbrake set;
- Wheel chock utilization;
- Attendance required; and
- Proper PPE (steel toed shoes, gloves, and/or goggles).

Delivery personnel must ensure bulk oil storage tanks are not overfilled by using one of the following:

- High liquid level alarms with an audible or visual signal (an audible air vent will suffice);
- High liquid level pump cutoff devices to stop flow at a predetermined container content level;
- Direct audible or code signal communication between the container gauge and the pumping station;
- A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers; or
- Regularly test liquid level sensing devices.

**Prior to departing**, the vendor is required to examine the lowest drain and other outlets for leakage. Prior to driving, vendor must ensure all equipment (transfer lines, valves, grounding and bonding equipment, etc.) has been disconnected or removed.

### **Spill Response**

In the event of an oil spill, the employee on duty (discoverer) will immediately:

1. **Stop the source of the spill and/or contain the spill if it is safe to do so.** The emphasis for the initial spill response is to **prevent oil from discharging off-site.**
2. Ensure the **area is safe for all nearby employees.**
3. Notify your Shift Supervisor and/or the Facility Manager as described in **Section 5.1.**

## APPENDIX F: TRAINING LOGS

### BURNETT OIL CO., INC. – NOBLES GRADE AND TAMIAMI FACILITIES TRAINING LOG

Date:
Start Time:
Stop Time:
Training Type:
Speaker/Instructor:
Description of the Training:
Attendee(s):
General Comments:

## APPENDIX G: AGENCY CONTACTS

### Outside Agencies' Contact Information

Agency	Address	Phone Number
National Park Service – Big Cypress National Preserve	33100 Tamiami Trail East Ochopee, FL 34141	(239) 695-2000
Collier County Sheriff's Office	3319 Tamiami Trail East Naples, FL 34112	Emergency: 911 Normal: (239) 252-9300
Collier County Emergency Management	8075 Lely Cultural Pkwy. Naples, FL 34113	Emergency: 911 Normal: (239) 252-3600
Greater Naples Fire District	2700 Horseshoe Dr. Naples, FL 34104	Emergency: 911 Normal: (239) 774-2800
City of Naples Fire-Rescue	355 Riverside Circle Naples, FL 34102	Emergency: 911 Normal: (239) 213-4900
Collier County Medical Services	8075 Lely Cultural Pkwy., Suite 267 Naples, FL 34113	Emergency: 911 Normal: (239) 252-3740
Florida Department of Environmental Protection – South District	2295 Victoria Ave., Suite 364 Fort Myers, FL 33901	(239) 344-5600
Florida Department of Environmental Protection – State Watch Office	Online reporting: <a href="https://floridadep.gov/pollutionnotice">https://floridadep.gov/pollutionnotice</a>	(800) 320-0519
National Response Center (NRC)	c/o United States Coast Guard (CG-5335) – Stop 7581 2100 2nd Street, Southwest Washington, D.C. 20593	(800) 424-8802

## APPENDIX H: NOTIFICATION FORMS

---



# Florida Department of Environmental Protection

Bob Martinez Center  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Rick Scott  
Governor

Carlos Lopez-Cantera  
Lt. Governor

Noah Valenstein  
Secretary

## Pollution Notice

You are submitting a Public Notice of Pollution in accordance with [Section 403.077, F.S.](#) which is intended to prevent harm to human health, welfare, or property by assisting the control of pollution. This rule specifies that "reportable releases" are required to be reported to the Department.

Please be aware that while submission of a Notice through this form complies with the requirements of Section 403.077, F.S., it does not relieve you of any obligation to report to the State Watch Office or other authority required by your permit or state law.

Fields marked with \* are required. After completion, please e-mail the form to [pollution.notice@dep.state.fl.us](mailto:pollution.notice@dep.state.fl.us).

If you are reporting a new release, please select "Initial Notice" below.

If you have previously reported this incident, have obtained a DEP Incident ID, and wish to update your Notice, please select "Updated Notice of Pollution" and enter the DEP Incident ID.

### NOTICE TYPE \*

☐ Initial Notice of Pollution

☐ Updated Notice of Pollution

If this is an updated Notice, DEP Incident ID: \_\_\_\_\_

### INCIDENT INFORMATION

Please enter a name for the Incident: \_\_\_\_\_

State Watch Office Incident Number or Case ID: \_\_\_\_\_

Incident Report (Please enter a complete description of the incident. If you have a summary e-mail from the State Watch Office, you may copy that and paste it here): \*

**Incident Location (in Decimal Degrees): \***

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

**Please select all counties directly affected by the Incident: \***

<input type="checkbox"/> Alachua	<input type="checkbox"/> Duval	<input type="checkbox"/> Holmes	<input type="checkbox"/> Miami-Dade	<input type="checkbox"/> Seminole
<input type="checkbox"/> Baker	<input type="checkbox"/> Escambia	<input type="checkbox"/> Indian River	<input type="checkbox"/> Monroe	<input type="checkbox"/> St. Johns
<input type="checkbox"/> Bay	<input type="checkbox"/> Flagler	<input type="checkbox"/> Jackson	<input type="checkbox"/> Nassau	<input type="checkbox"/> St. Lucie
<input type="checkbox"/> Bradford	<input type="checkbox"/> Franklin	<input type="checkbox"/> Jefferson	<input type="checkbox"/> Okaloosa	<input type="checkbox"/> Sumter
<input type="checkbox"/> Brevard	<input type="checkbox"/> Gadsden	<input type="checkbox"/> Lafayette	<input type="checkbox"/> Okeechobee	<input type="checkbox"/> Suwannee
<input type="checkbox"/> Broward	<input type="checkbox"/> Gilchrist	<input type="checkbox"/> Lake	<input type="checkbox"/> Orange	<input type="checkbox"/> Taylor
<input type="checkbox"/> Calhoun	<input type="checkbox"/> Glades	<input type="checkbox"/> Lee	<input type="checkbox"/> Osceola	<input type="checkbox"/> Union
<input type="checkbox"/> Charlotte	<input type="checkbox"/> Gulf	<input type="checkbox"/> Leon	<input type="checkbox"/> Palm Beach	<input type="checkbox"/> Volusia
<input type="checkbox"/> Citrus	<input type="checkbox"/> Hamilton	<input type="checkbox"/> Levy	<input type="checkbox"/> Pasco	<input type="checkbox"/> Wakulla
<input type="checkbox"/> Clay	<input type="checkbox"/> Hardee	<input type="checkbox"/> Liberty	<input type="checkbox"/> Pinellas	<input type="checkbox"/> Walton
<input type="checkbox"/> Collier	<input type="checkbox"/> Hendry	<input type="checkbox"/> Madison	<input type="checkbox"/> Polk	<input type="checkbox"/> Washington
<input type="checkbox"/> Columbia	<input type="checkbox"/> Hernando	<input type="checkbox"/> Manatee	<input type="checkbox"/> Putnam	
<input type="checkbox"/> DeSoto	<input type="checkbox"/> Highlands	<input type="checkbox"/> Marion	<input type="checkbox"/> Santa Rosa	
<input type="checkbox"/> Dixie	<input type="checkbox"/> Hillsborough	<input type="checkbox"/> Martin	<input type="checkbox"/> Sarasota	

Start Date and Time of Incident: \* \_\_\_\_\_

Is the Incident on-going?: \* ☐ Yes ☐ No

If No, End Date and Time of Incident: \_\_\_\_\_

Has the pollution migrated off-site from the Incident?: ☐ Yes ☐ No

If Yes, please select any county(ies) to which the Incident has migrated: \*

<input type="checkbox"/> Alachua	<input type="checkbox"/> Duval	<input type="checkbox"/> Holmes	<input type="checkbox"/> Miami-Dade	<input type="checkbox"/> Seminole
<input type="checkbox"/> Baker	<input type="checkbox"/> Escambia	<input type="checkbox"/> Indian River	<input type="checkbox"/> Monroe	<input type="checkbox"/> St. Johns
<input type="checkbox"/> Bay	<input type="checkbox"/> Flagler	<input type="checkbox"/> Jackson	<input type="checkbox"/> Nassau	<input type="checkbox"/> St. Lucie
<input type="checkbox"/> Bradford	<input type="checkbox"/> Franklin	<input type="checkbox"/> Jefferson	<input type="checkbox"/> Okaloosa	<input type="checkbox"/> Sumter
<input type="checkbox"/> Brevard	<input type="checkbox"/> Gadsden	<input type="checkbox"/> Lafayette	<input type="checkbox"/> Okeechobee	<input type="checkbox"/> Suwannee
<input type="checkbox"/> Broward	<input type="checkbox"/> Gilchrist	<input type="checkbox"/> Lake	<input type="checkbox"/> Orange	<input type="checkbox"/> Taylor
<input type="checkbox"/> Calhoun	<input type="checkbox"/> Glades	<input type="checkbox"/> Lee	<input type="checkbox"/> Osceola	<input type="checkbox"/> Union
<input type="checkbox"/> Charlotte	<input type="checkbox"/> Gulf	<input type="checkbox"/> Leon	<input type="checkbox"/> Palm Beach	<input type="checkbox"/> Volusia
<input type="checkbox"/> Citrus	<input type="checkbox"/> Hamilton	<input type="checkbox"/> Levy	<input type="checkbox"/> Pasco	<input type="checkbox"/> Wakulla
<input type="checkbox"/> Clay	<input type="checkbox"/> Hardee	<input type="checkbox"/> Liberty	<input type="checkbox"/> Pinellas	<input type="checkbox"/> Walton
<input type="checkbox"/> Collier	<input type="checkbox"/> Hendry	<input type="checkbox"/> Madison	<input type="checkbox"/> Polk	<input type="checkbox"/> Washington
<input type="checkbox"/> Columbia	<input type="checkbox"/> Hernando	<input type="checkbox"/> Manatee	<input type="checkbox"/> Putnam	
<input type="checkbox"/> DeSoto	<input type="checkbox"/> Highlands	<input type="checkbox"/> Marion	<input type="checkbox"/> Santa Rosa	
<input type="checkbox"/> Dixie	<input type="checkbox"/> Hillsborough	<input type="checkbox"/> Martin	<input type="checkbox"/> Sarasota	

## FACILITY INFORMATION

Facility/Installation Name: \*

Address Line 1:

Address Line 2:

Directions:

City:

State: \* FL

Zip Code:

## REPORTER DETAILS

Name: \*

Title: \*

Phone: \* Ext:

E-mail Address: \*

Relationship: \* ☐ Operator of the Facility/Installation ☐ Owner of the Facility/Installation

☐ Other (Please specify relationship):

## CONTACT DETAILS

Name: \*

Phone: \* Ext:

E-mail Address: \*

### NRC Discharge Notification Form

Discharge/Discovery Date		Time	
Facility Name	Burnett Oil Co., Inc. – Durham Ranch Facility		
Facility Location (Address/Lat-Long/Section Township Range)	Lat-Long: 43.88493, -105.46736 Section 11, Township 45N, Range 72W Campbell County, WY		
Name of reporting individual		Telephone #	
Type of material discharged		Estimated total quantity discharged	Gallons/Barrels
Source of the discharge		Media affected	<input type="checkbox"/> Soil
			<input type="checkbox"/> Water (specify)
			<input type="checkbox"/> Other (specify)
Actions taken			
Damage or injuries	<input type="checkbox"/> No <input type="checkbox"/> Yes (specify)	Evacuation needed?	<input type="checkbox"/> No <input type="checkbox"/> Yes (specify)
Organizations and individuals contacted	<input type="checkbox"/> National Response Center 800-424-8802 Time		
	<input type="checkbox"/> Cleanup contractor (Specify) Time		
	<input type="checkbox"/> Facility personnel (Specify) Time		
	<input type="checkbox"/> State Agency (Specify) Time		
	<input type="checkbox"/> Other (Specify) Time		

ATTACHMENT 5

---

Corporate Structure and U.S. EPA Financial  
Assistance Forms

## CERTIFICATION OF AUTHORITY AND INCUMBENCY

COMES NOW Julie Phillips, after first being duly sworn, and does hereby certify:

1. I am the Secretary and Treasurer of Burnett Oil Co., Inc., a Texas corporation (the "Corporation")

2. Pursuant to the Corporation's Amended and Restated Bylaws dated August 1, 2011 (as may be amended or restated from time to time, the "Bylaws") and certain resolutions adopted by the Corporation's Board of Directors, the following persons have been appointed to the offices indicated below, and said persons do continue to hold such office at this time:

- a. Charles E. Nagel III – President
- b. Kevin T. Vermillion – Vice President, Special Services

3. Pursuant to the Bylaws and certain resolutions adopted by the Corporation's Board of Directors, the persons designated to serve in the above-entitled capacity were given sufficient authority to act on behalf of and to bind the Corporation with respect to transactions involving its oil and gas activities, including, without limitation, filing for permits with regulatory agencies.

4. Pursuant to the By-Laws and certain resolutions adopted by the Corporation's Board of Directors, I have the power and authority to execute this certificate on behalf of the Corporation.

Signed on this 2<sup>ND</sup> day of August, 2021.

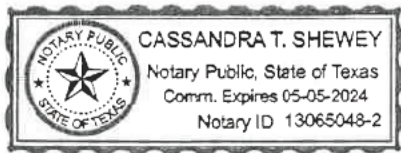
**(b)(6)**

Julie Phillips

STATE OF TEXAS            )  
  ) SS.

COUNTY OF TARRANT    )

Subscribed and acknowledged to me before me this 2nd day of August, 2021 by Julie Phillips, as Secretary and Treasurer of Burnett Oil Co., Inc.



(b)(6)

Notary Public

My Commission Expires: 5-5-2024

## SURETY PERFORMANCE BOND

U.S. Environmental Protection Agency  
Underground Injection Control  
Financial Responsibility Requirement

### BOND COVERS THE PLUGGING OF INJECTION WELLS

Date bond executed: June 28, 2021

Effective date: June 28, 2021

Principal: Burnett Oil Co., Inc.  
(Legal name of owner or operator)

Burnett Plaza, Ste. 1500, 801 Cherry St., Unit No. 9, Fort Worth, TX 76102-6881  
(Business address of owner or operator)

Type of organization: Corporation  
(Individual, joint venture,  
partnership, or corporation)

State of incorporation: Texas

Surety(ies): U.S. Specialty Insurance Company  
(Name)

13403 Northwest Freeway, Houston, TX 77040  
(Business Address)

EPA identification number, name, address, and plugging and abandonment amount(s) for each injection well guaranteed by this bond. (Indicate plugging and abandonment amounts for each well. Attach separate list if necessary.)

<u>Injection Well Information</u>	<u>Plugging &amp; Abandonment Amount</u>
<u>Tamiami SWD #1</u>	<u>\$320,000.00</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

Total penal sum of bond: \$ 320,000.00

Surety's bond number: B013607

KNOW ALL PERSONS BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto are firmly bound to the U.S. Environmental Protection Agency (hereinafter called EPA), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

WHEREAS said Principal is required, under the Underground Injection Control Regulations, as amended, to have a permit or comply with provisions to operate under rule for each injection well identified above, and

WHEREAS said Principal is required to provide financial assurance for plugging and abandonment as a condition of the permit or approval to operate under rule, and

WHEREAS said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall faithfully perform plugging and abandonment, whenever required to do so, of each injection well for which this bond guarantees plugging and abandonment, in accordance with the plugging and abandonment plan and other requirements of the permit or provisions for operating under rule and other requirements of the permit or provisions for operating under rule as may be amended, pursuant to all applicable laws, statutes, rules and regulations, as such laws, statutes, rules, and regulations may be amended,

Or, if the Principal shall provide alternate financial assurance as specified in Subpart F of 40 CFR 144, and obtain the EPA Regional Administrator's written approval of such assurance, within 90 days after the date of notice of cancellation is received by both the Principal and the EPA Regional Administrator(s) from the Surety(ies), then this obligation shall be null and void. Otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

Upon notification by an EPA Regional Administrator that the Principal has been found in violation of the plugging and abandonment requirements of 40 CFR 144, for an injection well which this bond guarantees performances of plugging and abandonment, the Surety(ies) shall either perform plugging and abandonment in accordance with the plugging and abandonment plan and other permit requirements or provisions for operating under rule and other requirements or place the amount for plugging and abandonment into standby trust fund as directed by the EPA Regional Administrator.

Upon notification by an EPA Regional Administrator that the Principal has failed to provide alternate financial assurance as specified in Subpart F of 40 CFR 144, and obtain written approval of such assurance from the EPA Regional Administrator(s) during the 90 days following receipt by both the Principal and the EPA Regional Administrator(s) of a notice of

cancellation of the bond, the Surety(ies) shall place funds in the amount guaranteed for the injection well(s) into the standby trust fund as directed by the EPA Regional Administrator.

The Surety(ies) hereby waive(s) notification of amendments to plugging and abandonment plans, permits, applicable laws, statutes, rules, and regulations and agrees that no such amendment shall in any way alleviate its (their) obligation on this bond.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) here under exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice by certified mail to the owner or operator and to the EPA Regional Administrator(s) for the Region(s) in which the injection well(s) is (are) located, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the EPA Regional Administrator(s), as evidenced by the return receipts.

The Principal may terminate this bond by sending written notice to the Surety(ies); provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the EPA Regional Administrator(s) of the EPA Region(s) in which the bonded injection well(s) is (are) located.

(The following paragraph is an optional rider that may be included but is not required.)

Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new plugging and abandonment amount, provided that the penal sum does not increase by more than 20% in any one year, and no decrease in the penal sum takes place without the written permission of the EPA Regional Administrator(s).

In WITNESS WHEREOF, The Principal and Surety(ies) have executed this Performance Bond and have affixed their seals on the date set forth above.

The persons whose signature appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording on this surety bond is identical to the wording specified in 40 CFR 144.70(c) as such regulation was constituted on the date this bond was executed.

PRINCIPAL:

Burnett Oil Co., Inc.  
(Name)  
Burnett Plaza, Ste. 1500, 801 Cherry St.,  
Unit No. 9, Fort Worth, TX 76102-6881

(Address)

**(b)(6)**

(Signature(s))

Chuck Nagel

(Name(s))

President

(Title(s))

CORPORATE SURETY(IES):

U.S. Specialty Insurance Company

(Name)

13403 Northwest Fwy., Houston, TX 77040

(Address)

**(b)(6)**

(Signature(s))

Michele K. Tyson

(Name(s))

Attorney-in-Fact

(Title(s))

Corporate Seal

Corporate Seal

Texas

State of Incorporation

\$ 7,200.00

Bond Premium

Texas

State of Incorporation

\$ 320,000.00

Liability Limit

(For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.)



**TOKIOMARINE  
HCC**

**POWER OF ATTORNEY  
AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING COMPANY  
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY**

KNOW ALL MEN BY THESE PRESENTS: That American Contractors Indemnity Company, a California corporation, Texas Bonding Company, an assumed name of American Contractors Indemnity Company, United States Surety Company, a Maryland corporation and U.S. Specialty Insurance Company, a Texas corporation (collectively, the "Companies"), do by these presents make, constitute and appoint:

Edwin H. Frank, III, Michele K. Tyson, W. Russell Brown, Jr., Meredith K. Anderson,  
Stephen Michael Smith or Timothy J. Briggs of Houston, Texas

its true and lawful Attorney(s)-in-fact, each in their separate capacity if more than one is named above, with full power and authority hereby conferred in its name, place and stead to execute, acknowledge and deliver any and all bonds, recognizances, undertakings or other instruments or contracts of suretyship to include riders, amendments, and consents of surety, providing the bond penalty does not exceed \*\*\*\*\*Three Million\*\*\*\*\* Dollars (\$3,000,000.00). This Power of Attorney shall expire without further action on April 23<sup>rd</sup>, 2022. This Power of Attorney is granted under and by authority of the following resolutions adopted by the Boards of Directors of the Companies:

Be it Resolved, that the President, any Vice-President, any Assistant Vice-President, any Secretary or any Assistant Secretary shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

Attorney-in-Fact may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements or indemnity and other conditional or obligatory undertakings, including any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts, and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be binding upon the Company as if signed by the President and sealed and effected by the Corporate Secretary.

Be it Resolved, that the signature of any authorized officer and seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signature or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, The Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 1<sup>st</sup> day of June, 2018.

**AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING COMPANY  
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY**

State of California

County of Los Angeles



By:

Daniel P. Aguilar, Vice President

A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

On this 1<sup>st</sup> day of June, 2018, before me, Sonia O. Carrejo, a notary public, personally appeared Daniel P. Aguilar, Vice President of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature

(seal)



I, Kio Lo, Assistant Secretary of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Los Angeles, California this 28<sup>th</sup> day of June, 2018.

Corporate Seal:  
Bond No.

B013607



Agency No. 8353

Kio Lo, Assistant Secretary

## TEXAS COMPLAINT NOTICE

### IMPORTANT NOTICE

- 1 To obtain information or make a complaint:
- 2 You may contact your agent.
- 3 You may call the company's toll free telephone number for information or to make a complaint at:

1-800-486-6695

- 4 You may also write to the company:

601 S. Figueroa St., Suite 1600  
Los Angeles, CA 90017

- 5 You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights or complaints at:

(800) 252-3439

- 6 You may write the Texas Department of Insurance:

P.O. Box 149091  
Austin, TX 78714-9091  
Fax No.: (512) 490-1007  
Web: <http://www.tdi.texas.gov>  
E-mail: [ConsumerProtection@tdi.texas.gov](mailto:ConsumerProtection@tdi.texas.gov)

7

### PREMIUM OR CLAIM DISPUTES:

Should you have a dispute concerning your premium or about a claim you should contact the agent or the company first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

### ATTACH THIS NOTICE TO YOUR POLICY:

8

This notice is for information only and does not become part or condition of the attached document.

### AVISO IMPORTANTE

Para obtener informacion o para someter una queja:  
Puede comunicarse con su agente.

Usted puede llamar de numerero de telefono gratis de la compania para informacion o para someter una queja al:

1-800-486-6695

Usted tambien puede escribir a la compa ia:

601 S. Figueroa St., Suite 1600  
Los Angeles, CA 90017

Puede comunicarse con el Departamento de Seguros de Texas para obtener informacion acerca de companias, coberturas, derechos o quejas al:

(800) 252-3439

Puede escribir al Departamento de Seguros de Texas:

P.O. Box 149091  
Austin, TX 78714-9091  
Fax No.: (512) 490-1007  
Web: <http://www.tdi.texas.gov>  
E-mail: [ConsumerProtection@tdi.texas.gov](mailto:ConsumerProtection@tdi.texas.gov)

### DISPUTAS SOBRE PRIMAS O RECLAMOS:

Si tiene una disputa concerniente a su prima o a un reclamo, debe comunicarse con el agente o la companie primero. Si no se resuelve la disputa, prede entonces comunicarse con el departamento (TDI).

### UNA ESTE AVISO A SU POLIZA:

Esta aviso es solo para proposito de informacion y no se convierte en parte o condicion del documento adjunto.

ATTACHMENT 6

---

# Updated Figure 7

## **PLUGGING AND ABANDONMENT PLAN**

---

1. Obtain Florida Department of Environmental Protection permit.
2. Provide at least 30 days written notification to US EPA Region 4 (U.S. EPA) of plans for plugging and abandoning (P&A) the well and receive written approval from U.S. EPA to proceed.
3. Perform mechanical integrity test.
4. Suppress the wellhead pressure with drilling mud.
5. Dismantle and remove wellhead and associated piping network.
6. Remove tubing and packer system.
7. Backfill 7.875-inch diameter open borehole with crushed limestone gravel from 2,850 feet below land surface to 2,350 feet below land surface.
8. Cement the well within the 8.625-inch outside diameter production casing with ASTM Type I/II cement from 2,350 feet below land surface to surface.
9. Install and weld steel plate monument to 8.625-inch outside diameter production casing.

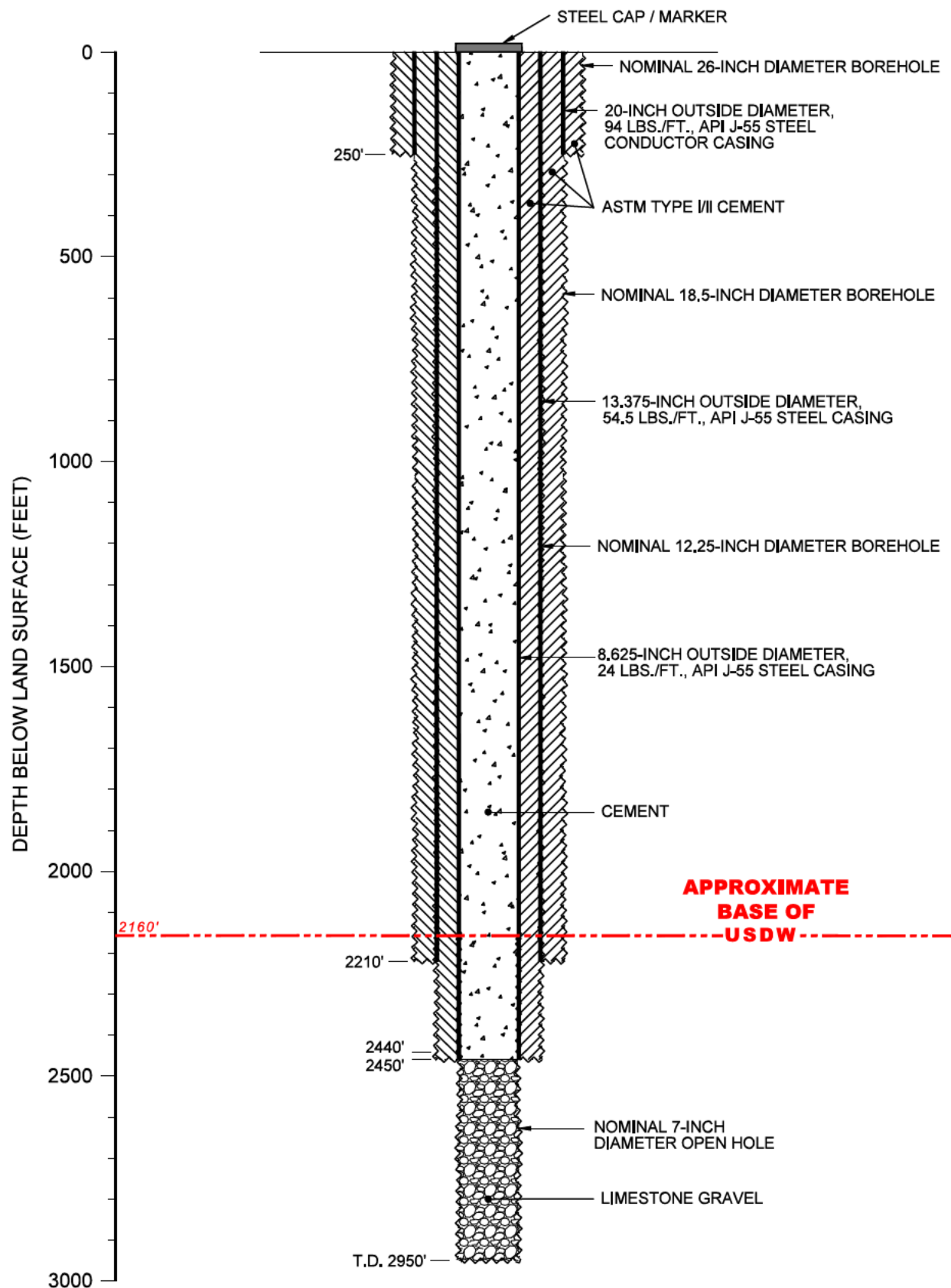


FIGURE 14. SALTWATER DISPOSAL WELL PLUG AND ABANDONMENT SCHEMATIC (UPDATED JULY 2021).

ATTACHMENT 7

---

# Documentation from National Park Service















































































































































